# METAL PRODUCTS MANUFACTURING

# MPM

*Serving the Appliance and Fabricated Metal Products Industry*

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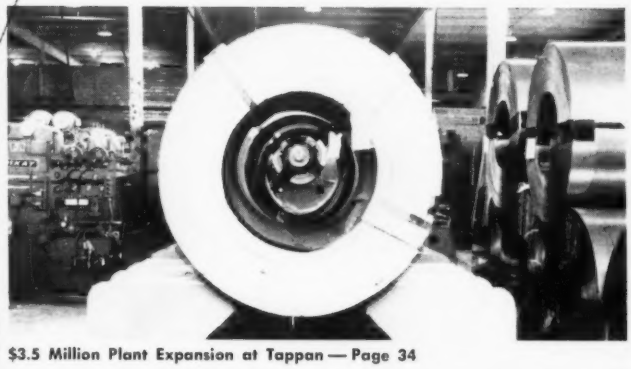
**JULY 1960**

Third Annual Automatic Merchandising Special Section — Page 43

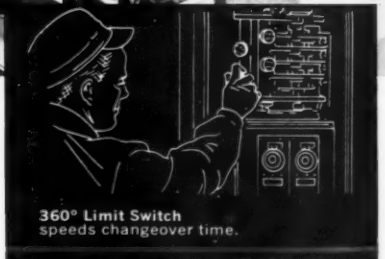


$3.5 Million Plant Expansion at Tappan — Page 34

Staff Reports on Major Industry Meetings

# YOU SAVE WITH CLEARING PRESSES

With a bottom drive press, the main floor is cleared for better material handling, increased safety and improved appearance. The lower level simplifies scrap removal and equipment maintenance.



**360° Limit Switch**
speeds changeover time.

**Automatic Shutheight Control**
speeds adjustment, increases accuracy.

**Hydraulic Overload Protection**
increases safety.

## WITH A LINE LIKE THIS...OR A LINE OF TORC-PAC O.B.I.'s—CLEARING PROVIDES THE ULTIMATE IN METAL FORMING EFFICIENCY

Clearing is now building a line like the one above. Presses like these equipped with moving bolsters and the latest features and control devices (as shown at right) are the way to increase profits and production by combatting rising material and manufacturing costs.

Undoubtedly, your production problem is different from the one solved by the press line above. However, whatever the problem—whatever the type or size of press equipment, feeding equipment and dies are best for you—you can rely on Clearing for the most effective solution. Call on Clearing at any time.

*Bulletins on Moving Bolster and Bottom Drive Presses are available now.*

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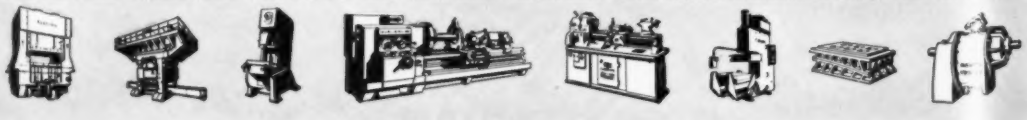
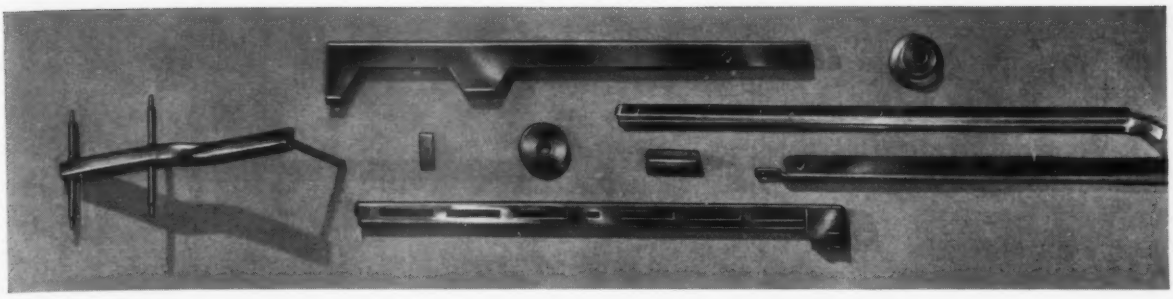
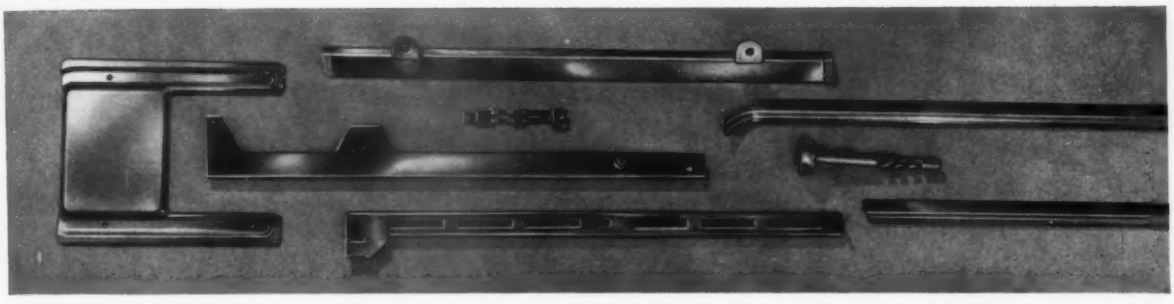
Mechanical Presses • Hydraulic Presses • Torc-Pac O. B. I. Presses • Axelson Lathes • Harrison Lathes • Special Equipment for Aircraft & Missiles Mfg. • Dies • Torc-Pac Drives



# Why These Dishwasher Parts



# are Made of Armco 17 Stainless



## *Resists Corrosion, Guards Appearance, Assures Lasting Strength and Economical Production*

Four major benefits prompt use of economical Armco 17 (Type 430) Stainless Steel by Design and Manufacturing Company, Connersville, Indiana, for critical parts of "Roto-Tray" undercounter and portable dishwashers.

L. L. Burke, Vice President, cites these advantages:

1. *Resists corrosion* — Armco 17 shrugs off effects of alkaline dishwashing detergents and food acids.
2. *Stays attractive* — Stainless steel has no plating to chip or wear away. It is solid rust-resisting metal that stays bright.
3. *Remains strong* — Armco 17 Stainless gives plenty of "muscle" to load-carrying parts, doesn't lose its strength.
4. *Fabricates readily* — Common techniques are used in fabrication. Easy weldability of Armco 17 permits quick, economical assembly.

**These and other advantages of uniform-quality Armco Stainless Steels help give a competitive edge to products of many manufacturers. Perhaps they could add sales power to yours. For more information, fill in and mail the coupon.**

Identify stainless in your products with the STEELMARK.

New steels are born at Armco

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2220 Curtis Street, Middletown, Ohio

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☐ the Armco Stainless catalog.

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# ARMCO STEEL

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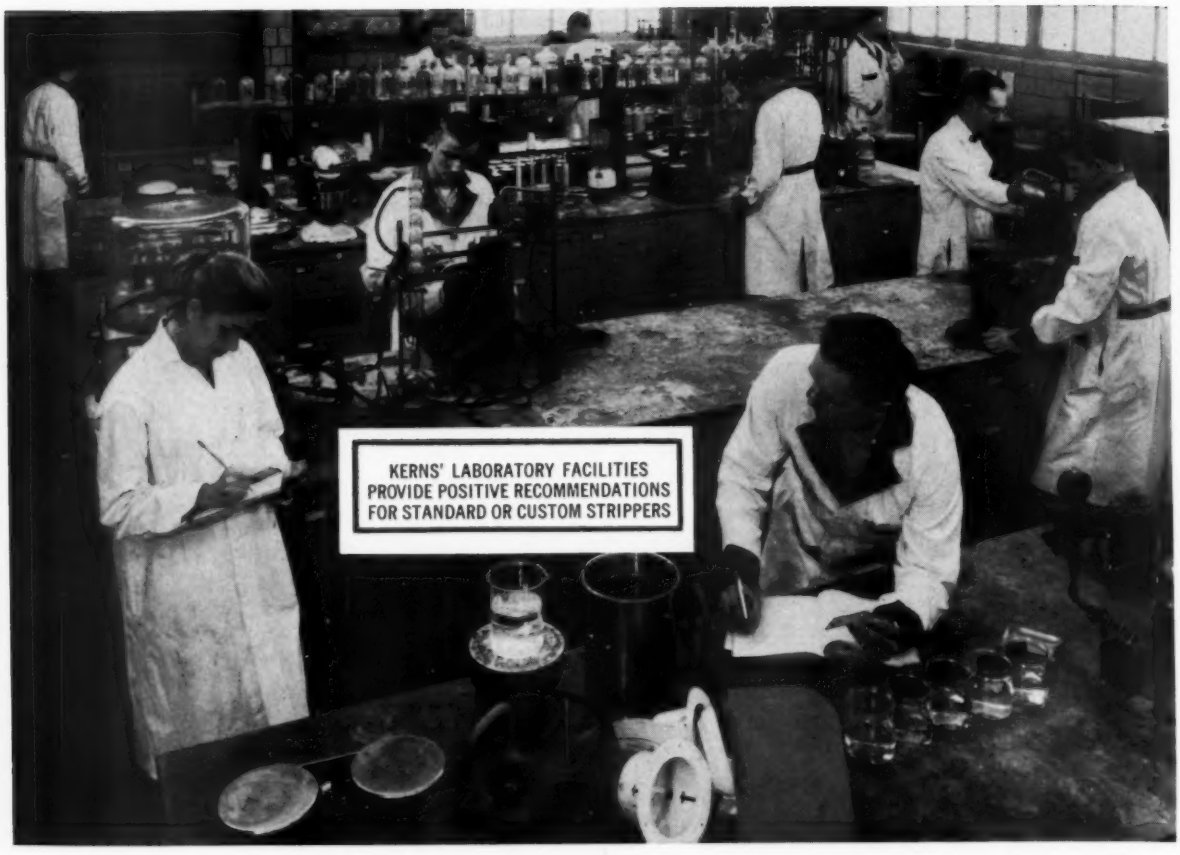



# KERNS' PAINT STRIPPER RECOMMENDATIONS CAN SAVE YOU PRODUCTION TIME AND MONEY

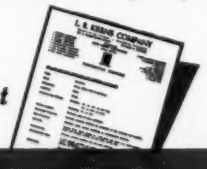
Kerns offers a complete line of low cost strippers, including hot alkaline, cold solvent and flush-off types. However, the type of paint alone does not *always* determine the most economical yet efficient stripper to be used...thickness of paint, base metal, cycling time, safety rules, method of handling, etc., are variables which should be considered.

Kerns maintains one of the finest and most modern stripper testing and research laboratories that is fully staffed with trained technicians of long experience in the industrial chemical field.

This facility is at your disposal free of charge and without obligation. For fast action, send a finished sample or panel to Kerns Technical Service Department with details of your operation. We can save you time and money by making the proper stripper recommendations.

***Memo Billing Trial Basis***

*If you would like to test a Kerns' stripper on your own production line, we will supply material . . . no formal invoice rendered unless completely approved in production!*



***for general stripper recommendations request Kerns' Stripper Selection Chart***

**Kerns Company**

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(including finish)


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# METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

**A trade publication** devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.


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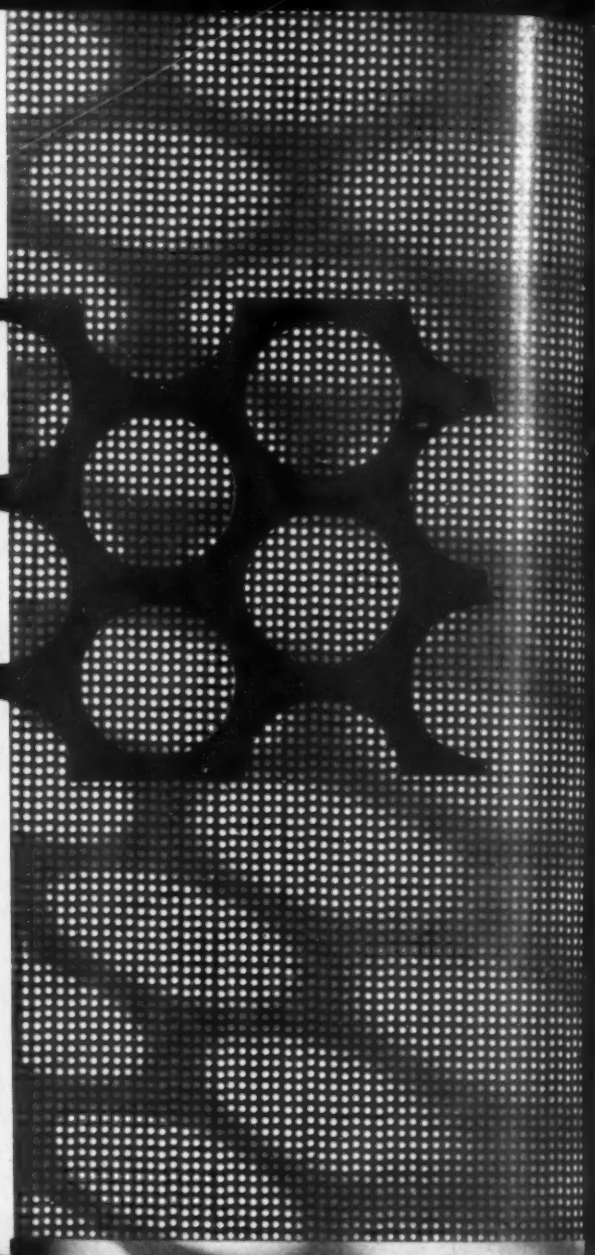

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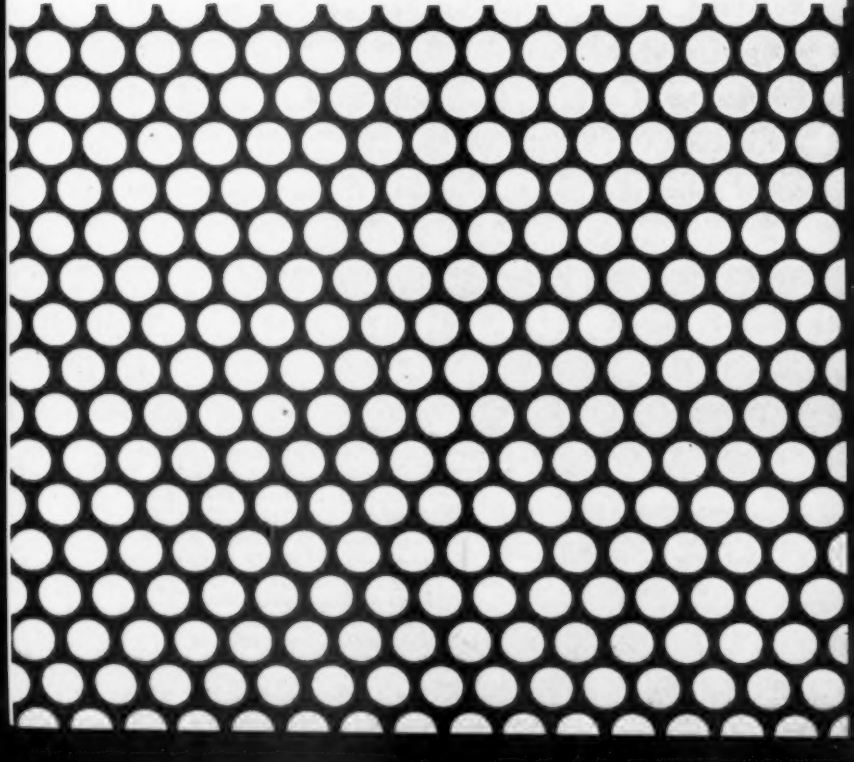

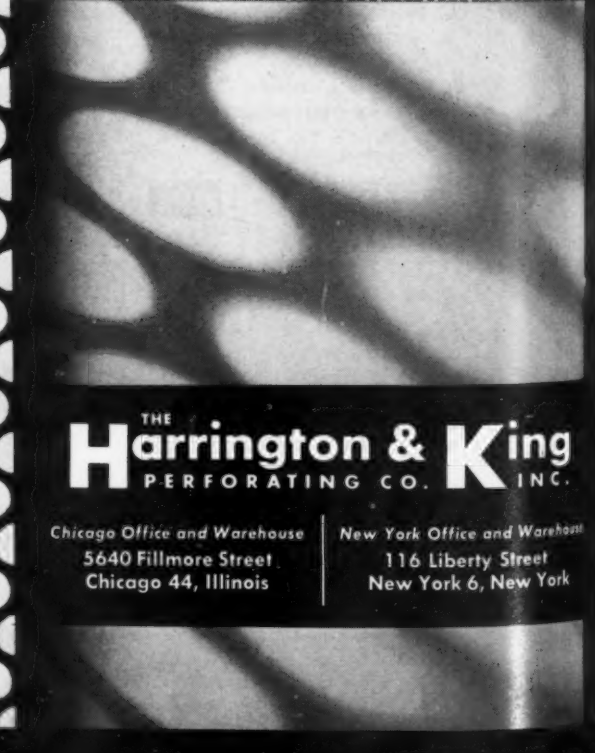

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AN MPM STAFF REPORT

# Design engineers meet in New York

PRODUCTS FOR TODAY AND TOMORROW were exhibited in profusion at the Design Engineering Show held at the Coliseum in New York City for four days, starting May 23. While highly scientific and technical developments represented an important part of the show, there were also many exhibits of equipment, materials and components appealing to the engineer for immediate practical application.

Among the many exhibits of unusual interest were:

Bearings that make possible home appliances which never need oiling, furnaces which don't rumble, air conditioners which won't squeak, and kitchen fans that won't leak oil. (Tann Bearing Co.)

Machine shafts that float on air instead of oil. (Amplex Div., Chrysler)

A picnic cooler which weighs less than a pound but holds 40 pounds of ice. (H. B. Fuller Co.)

Garden furniture which looks like wrought iron but is as light as a feather.

Tiny electric batteries less than an inch long. (Lead Industries)

New adhesives capable of supporting 5,000 pounds per sq. in. (Eastman Chemical)

Coated glass to stop fluorescent lamps from interfering with radio and television reception and glass balls to knock food particles off cutlery in automatic dishwashers. (Corning Glass)

A 50 million lumen light-flasher, one of the most powerful light sources on earth, for tracking rockets when they are shot off into space. (Battelle)

Among the 400 companies exhibiting 10,000 products, representing the latest fruits of their research and development programs, were many of the largest American manufacturers along with small independent laboratories. About 17,800 engineers and executives (third day's total) from more than 20 countries visited the show, according to an official show management report to MPM.

Bendix Aviation Corp. displayed a computer actually in the process of writing a 511-page book. The computer not only serves as author but also sets the type from which photo-offset plates may be made ready for the press.

American Smelting & Refining Co. introduced the new alloy which looks like wrought iron and can be cold-cast into shape but is as light as aluminum. New fashions in garden furniture are expected from this alloy, according to the company.

The Battelle Memorial Institute demonstrated an electronic scanner capable of reading a daily newspaper or any other printed matter and transposing the words into tonal sounds which a blind person can be taught to understand.

Other products included electric motors which run under water, tiny electric batteries to replace flint and fluid in cigarette lighters, and gears which never need oil even under tremendous pressure and heat.

The show's exhibits were valued at more than $10 million, but the amount is only a small fraction of the estimated $11 billion which American industry spends each year on research and development.

### ASME Conference

Running concurrently with the show was the Design Engineering Conference sponsored by the American Society of Mechanical Engineers. Speakers addressed four days of meetings on the theme of adapting space-age and atomic technology to everyday products.

Modular units to replace the assembly line were discussed by Arnold Lawson, consulting project engineer, Melspar, Inc. These "units," according to Lawson, can perform all the functions of the end product assembly line and can be readily rearranged for the production of an entirely different product. For example, a line might produce clocks today and typewriters tomorrow.

The concept of modular construction is not new, Lawson noted, pointing out that designers of computers and other electronic equipment have used modular sub-assemblies for years, with good results.

### Five basic units in assembly system

He added that a mechanical assembly system contains five basic units: one to provide power, one to feed parts to be assembled, one to put them into position, one to assemble them, and one to control and guide all the other units. With adaptable modular units, new instructions could be fed into the control unit on punched cards or magnetic tape to produce a new product.

Lawson said further, "Mechanized equipment is not necessarily limited to 'long run' production. In many applications punch-card control is equally feasible for 'short runs.' Punch-card control for short runs becomes feasible when there is an appreciable cost savings at changeover."

"As we make progress in the development of new materials and metals," said John J. Chyle, director of welding research for the A. O. Smith Corp., Mil-

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SKIP
ONE
TRIP
THROUGH
THE
FURNACE...

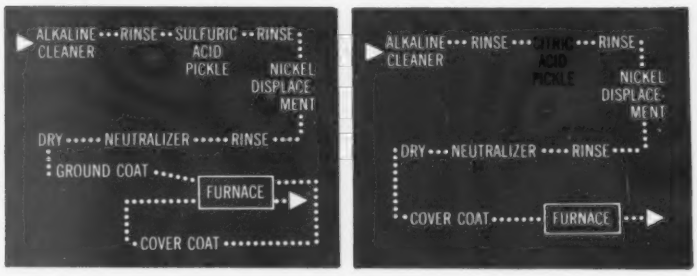
# NOW! PRACTICAL DIRECT-ON PORCELAIN ENAMELING WITH

PFIZER

# CITRIC ACID

## (THE RAY-DAVIS **CITROBOND*** PROCESS)

**CONVENTIONAL 2-COAT PROCESS** **RAY-DAVIS CITROBOND PROCESS**




■ Now you can produce excellent, one-coat porcelain enamel finishes on metal surfaces. Your present equipment, only slightly modified, can bring you the advantages of the new money-saving development....CITROBOND. ■ The principal innovation in the process occurs in the pickling bath—Pfizer Citric Acid is used in place of the sulfuric acid employed in conventional two-coat processing. ■ Citric acid so prepares the metal that a ground coat is unnecessary. You apply the cover coat directly. Each piece requires just one firing—in your present furnace, of course. The result is enameled steel, with excellent bond and a finish that will satisfy any customer. Excellent results can also be obtained using the CITROBOND Process with the new direct-on steels. ■ Pfizer will be glad to send you technical information on the modern Ray-Davis CITROBOND Process. The coupon below is for your convenience.

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*Process developed by W. G. Ray, Chas. Pfizer & Co., Inc., and Shipp C. Davis, Daco Corp.

## IMPORTANT ADVANTAGES OF THE CITROBOND 1-COAT PROCESS

- no special handling of pickled steel required
- no major installation of special equipment required
- non-premium type steels can be used
- only one application—the finish coat
- citric acid is dry, non-toxic, water-soluble—easy to handle

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BROOKLYN 6, N. Y.

PLEASE SEND ME:
☐ TECHNICAL INFORMATION
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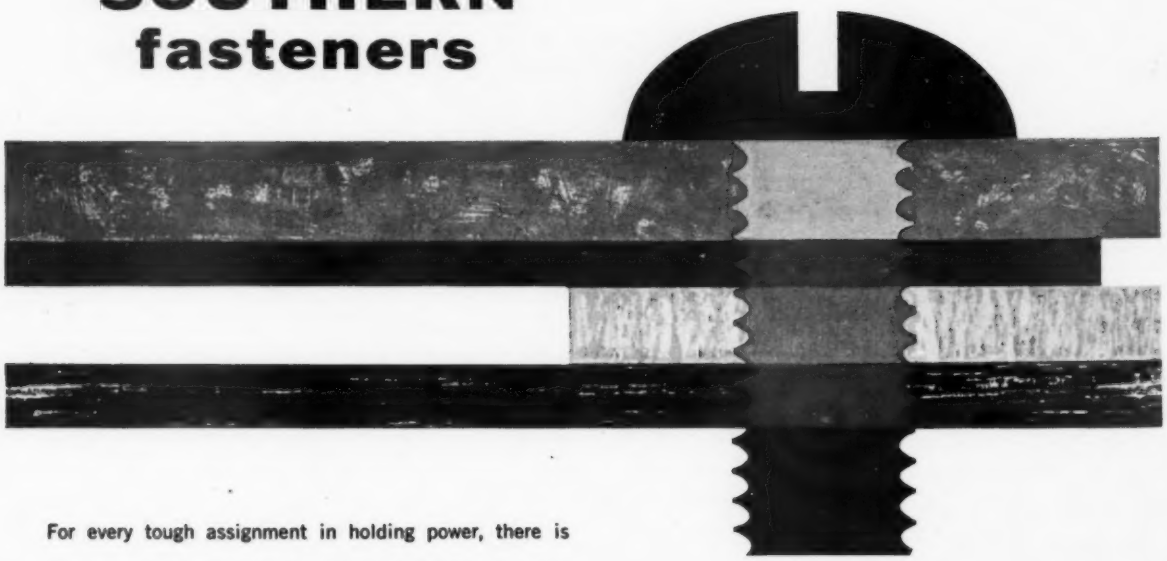

For every tough assignment in holding power, there is no substitute for Southern fasteners, made with knowledge and experience gained through nearly 15 years of specialization in fasteners exclusively. This know-how will go to work for you on tough or conventional jobs when you specify Southern Screws. That's why many industries have standardized 100% on Southern. Get in touch today with your local Southern Screw distributor, or write direct to Southern Screw Company, P. O. Box 1360, Statesville, North Carolina.

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*a brand* ***NEW*** *kind of* ***STEEL SHEET***
*for porcelain enameling*

BETHLEHEM STEEL

# NEW BETHNAMEL

BETHLEHEM STEEL

*...superb results at low costs*

*...for either two-coat or direct-on porcelain enameling*

Here is a totally new kind of steel sheet which provides a really outstanding enameling job, not only in the standard two-coat process but for single, "direct-on" cover coating too.

Developed by Bethlehem research engineers, Bethnamel is produced by an entirely new method. This new sheet has the amazingly low carbon content of about .003 pct, barely 1/10th that of ordinary enameling iron. Other elements are properly balanced to maintain superb enameling properties, and provide good sag resistance, drawability, and weldability, as well.

## Single-Coat with Minor Changes in Cycle

With Bethnamel, boiling and fish-scaling are no problem, making this remarkable new sheet far superior to other enameling materials in the direct-on cover coat process. Simple, inexpensive modifications of existing two-coat pre-treatments are all that are needed to assure excellent adherence and rich appearance of the enamel.

## Direct-on Method Cuts Costs

Bethnamel costs no more than conventional enameling iron. Thus enamelers can save on processing without adding to base metal costs. Bethlehem engineers are anxious to help you get started with this superior enameling sheet. If you're interested, by all means let our nearest sales office give you full details.

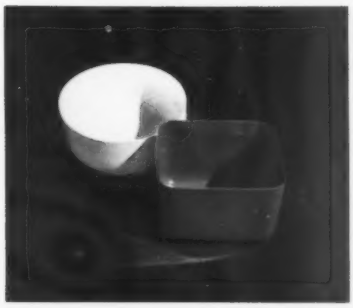
RANGE TOPS DEEP-DRAWN at Caloric Appliance Corp., Topton, Pa., are unusually tough draws, because of the relatively sharp corners. Bethnamel sheets take this severe drawing beautifully, prior to enameling.

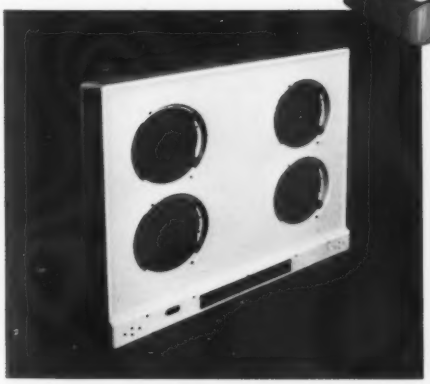
GAY PORCELAIN-ENAMELED PANELS on this school speak for the rapid growth of colorful curtain wall construction. Bethnamel sheets have proved ideal for these applications, due to high sag resistance and excellent enameling properties.

BETHLEHEM ENGINEERS WILL

**BETHNAMEL EASY TO DEEP-DRAW**

Drawing-quality Bethnamel sheets can be deep-drawn with superior results, as shown in this group of tough-to-make porcelain-enameled articles. No splits or cracks here!



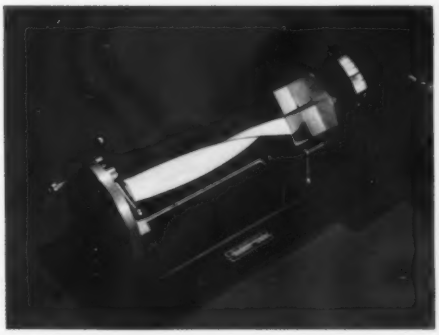


**SUPERIOR SAG RESISTANCE**

These 20-ga samples of Bethnamel (A), enameling iron (B), and cold-rolled steel (C), demonstrate that Bethnamel's sag resistance is better than that of enameling iron, and far superior to cold-rolled sheet steel, at firing temperatures of 1600 degrees.

**ENAMEL THAT REALLY STAYS ON**

In this torsion test, a simple angle of direct-coated Bethnamel was twisted 180 degrees without damage to the enamel. Because its thickness is only 3 to 4 mils, compared to 6 to 8 mils or more for 2 coats, a direct-on enamel can withstand much rougher handling!



**TYPICAL MECHANICAL PROPERTIES**

20-Gage Bethnamel Sheet

| | Yield Strength (psi) | Tensile Strength (psi) | Total Elongation | Rockwell B | Olsen Cup Test (inches) |
|---|---|---|---|---|---|
| Longitudinal | 26,000 | 43,000 | 38 pct | 43 | 0.425 |
| Transverse | 28,000 | 44,000 | 40 pct | | |

HELP YOU WITH YOUR STEELWORKING PROBLEMS

BETHLEHEM STEEL

# NEW BETHNAMEL
## lights up like a lamp!

Now sheet-steel-and-ceramic panels can light up a room without bulbs, tubes, filaments, or cathodes! Called Panelescent® Lighting, this revolutionary "area" source of light is a development of Sylvania Lighting Products. A whole ceiling can become one huge lamp, or specific portions of an area can be lighted up, as in the automobile instrument panels shown here.

New Bethnamel sheet steel is proving to be a very practical base metal for Panelescent® applications. Sylvania is just one of many companies which are growing increasingly enthusiastic about Bethnamel. The future looks bright, both for Bethnamel and the porcelain enameling industry!

*"Panelescent®" is Sylvania's registered trade name for electroluminescence*

# Steel
## *is strong, ductile, versatile...* AND BETHLEHEM MAKES IT IN NEARLY EVERY FORM

**Here's a partial list of steels and specialty products in the Bethlehem line:**

**BARS AND BILLETS:**
Carbon and alloy AISI grades
Concrete reinforcing bars
Leaded steels
Special rolled sections

**TOOL STEELS:**
Water, oil, and air-hardening grades

**ROD AND WIRE:**
General and special-purpose types
Fine and shaped wire

**FORGINGS:**
Drop, press, hammer, and upsetter
Rolled-and-forged sections

**SHEETS:**
Hot- and cold-rolled
Continuously galvanized
Enameling sheets

**TIN MILL PRODUCTS:**
Electrolytic and hot-dip tinplate; blackplate

**PLATES:**
Universal and sheared
Flanged and dished heads

**FASTENERS:**
Bolts, cap screws, rivets
Special fasteners

**STEEL PIPE:**
Continuous butt-weld
Electric resistance-weld

**STRUCTURAL SHAPES**

**COLD-FORMED SHAPES**

**PALLET RACKS**

**WELDMENTS:**
Frames, tanks, housings, vessels

**FREIGHT CARS, PARTS, WHEELS, AXLES**

**WIRE ROPE AND SLINGS**

**RAILS:**
Tee, crane, girder

**CASTINGS:**
Carbon, alloy, and stainless steel
Iron, brass, bronze

**Room 1041,**
**Bethlehem Steel Company, Bethlehem, Pa.** M10

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*where*
*dependability*
*is essential*

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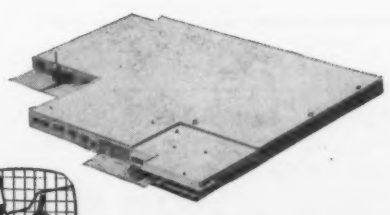
*are on the job!*

In the home appliance industry as well as in automotive, marine, farm equipment and many others, Universal Screws can be counted on to do the job they're engineered for—and more besides. It's this kind of complete dependability that gives manufacturers of ranges, refrigerators, washers, dryers, radio, television, tape recorders and other wife-saving appliances specify UNIVERSAL for screws, bolts, nuts, washers. If you're not yet a Universal screw customer there's no better time than now for you to gain all the advantages that doing business with Universal brings.



Specialists in Fasteners for the Appliance Industry

**UNIVERSAL SCREW COMPANY**

MANUFACTURERS

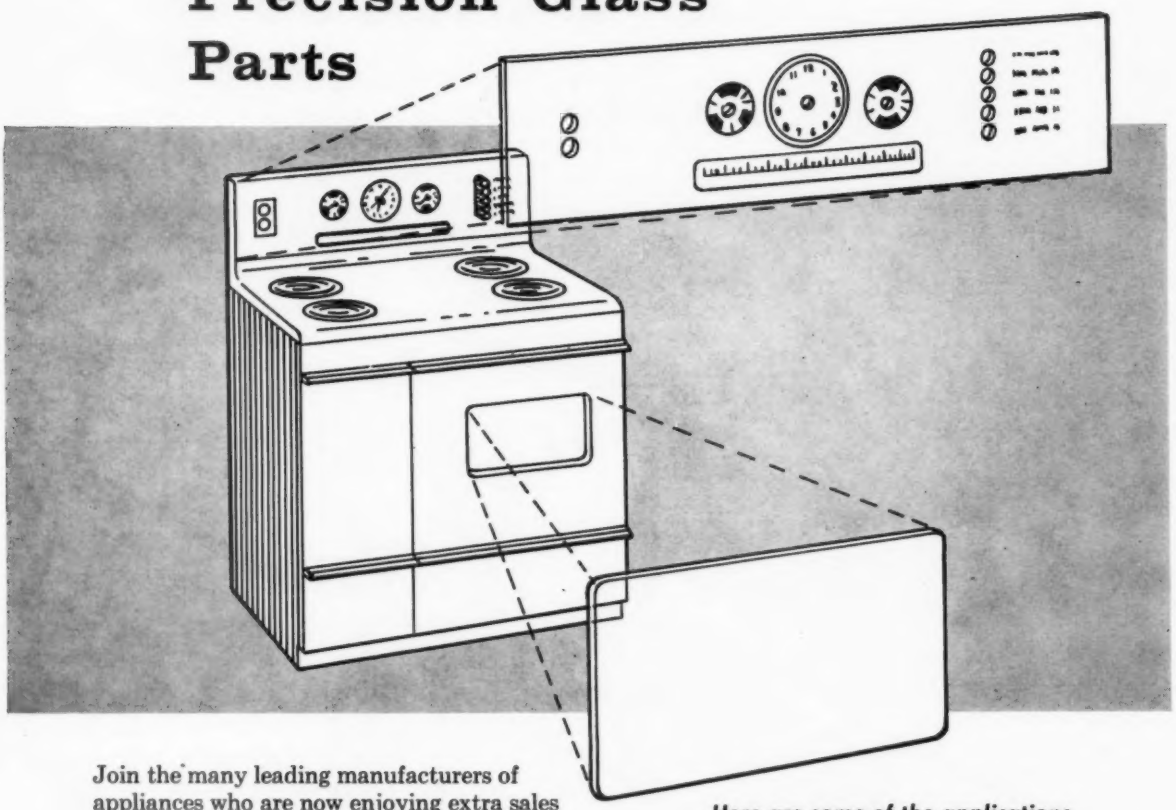
Member, Screw Research Association

2401 Brummel Place, Evanston, Illinois — DAvis 8-0450, Teletype Evanston Ill 1767

SALES OFFICES IN DETROIT, CLEVELAND, MILWAUKEE

# MARSCO

## for the finest in Precision Glass Parts



Join the many leading manufacturers of appliances who are now enjoying extra sales from the appeal and prestige contributed thru the luster of glass. Glass will enhance the beauty and broaden the acceptance of your product. It can be hardened, heat-treated or tempered to survive consumer usage unscathed.

Let Marsco's craftsmen engineering team impart to your product all the advantages of glass.

***Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:***

- CLOCK AND TIMER CRYSTALS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- OVEN DOOR WINDOWS for both Conventional and Built-In Ranges
- LIGHT LENSES
- PHOTOGRAPHIC EQUIPMENT
- DIALS AND NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT
- LAMP GLASS
- SHELVING
- ROTISSERIES
- WASHING MACHINES
- DRYERS
- PEEP SIGHTS FOR WATER HEATERS

*Special Shapes for: Instruments, Gauges, Household and Industrial Appliances.*

**ask for the man from**

Marsco

**MARSCO MFG. CO., 2901 S. HALSTED ST., CHICAGO 8, ILL.**

# MPM

## editor's mail

### Keeping costs down

Gentlemen: I am director in charge of the Product Cost Improvement Department of the Unitary Equipment Division of the Carrier Corp., Syracuse, N. Y., and responsible for pursuing any and all types of activity directed towards keeping costs low as well as finding ways and means of reducing existing cost of production and services.

I have had an opportunity to go through METAL PRODUCTS MANUFACTURING frequently but do not receive it regularly.

I am requesting that, if possible, I be added to your free list of distribution. I feel that I would like to be sure to get this magazine regularly.

**Frank D. Stevens, Director**
**Product Cost Improvement Dept.**
**Unitary Equipment Div.**
**Carrier Corp., Syracuse, N. Y.**

### The article by Romney

Gentlemen: We are interested in the "Consumer Satisfaction First" article by George Romney appearing on pages K-13 and K-42 of your May, 1960 issue of MPM.

We would appreciate receiving a copy of this article.

**D. P. Coleman, Personnel Dept.**
**Sylvania Electronic Systems**
**Div. of Sylvania Electric Products Inc.**
**Buffalo, N. Y.**

### Coated steels

Gentlemen: The writer's attention was called to an article appearing in both the January and February issue of Metal Products Manufacturing regarding hot dip galvanizing.

I understand that this is a series covering the subject matter and was written by a Mr. Spencer.

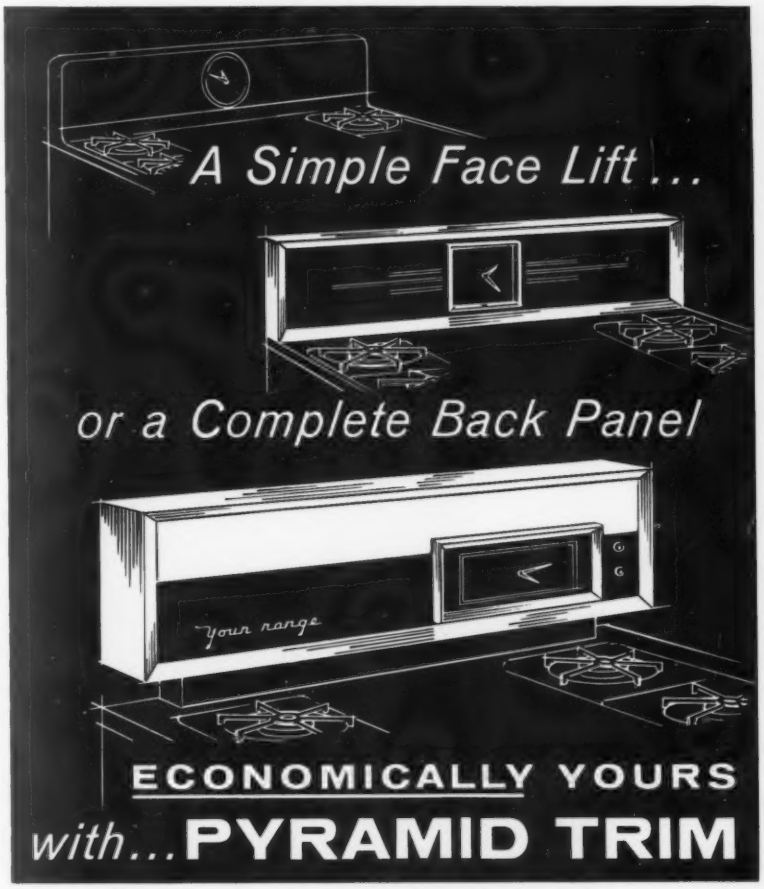
Is it possible that the writer could receive tear sheets of these articles? Would appreciate receiving same . . .

**E. J. Adam, Galvanizing Manager**
**H. K. Porter Co., Inc.**
**Delta-Star Electric Div.**
**Chicago, Ill.**

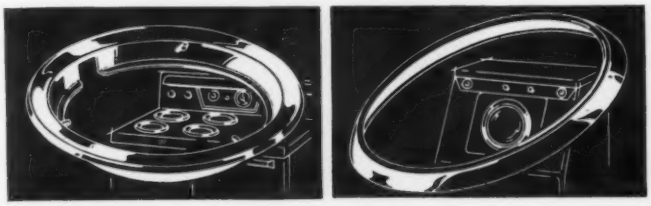
### Read in many departments

Gentlemen: I am very much interested

*to Page 18* →


A new look can be yours for little or no tooling cost with Pyramid Trim. Standard sections can be custom tailored to combine dollar savings with individual design . . . to simply rearrange your back guard, or to provide a complete new instrument panel. Details and samples on request.



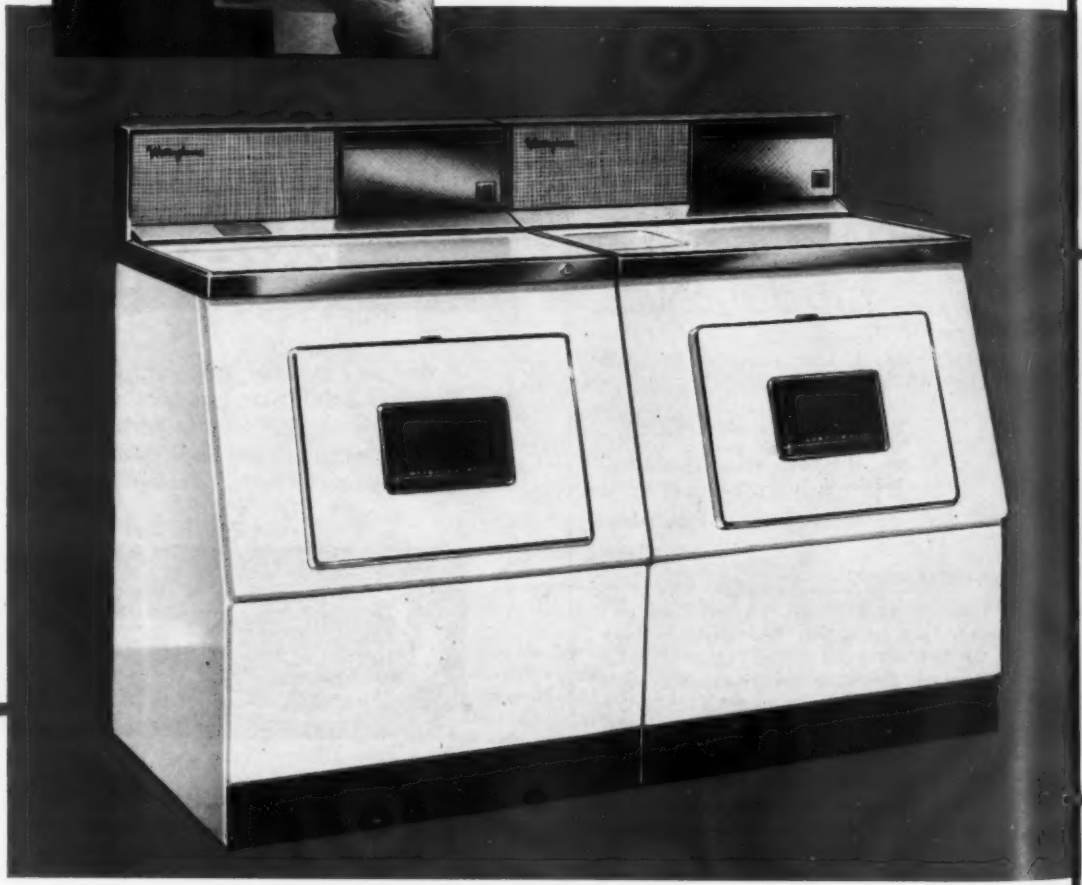
Pyramid glistening stainless steel rings "dress up" today's best selling appliances. Roll-formed from endless spirals, Pyramid rings cut costs by eliminating waste.

**Pyramid Mouldings Inc.**
5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.—BRONXVILLE, NEW YORK
WESTERN MOULDINGS INC., 1111 EAST 8TH STREET, UPLAND, CALIFORNIA

# Westinghouse

## to improve beauty and performance

"We've proved to our complete
thermo-setting acrylic enamel gives
and improved resistance to staining



**PITTSBURGH INDUSTRIAL FINISHES**

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

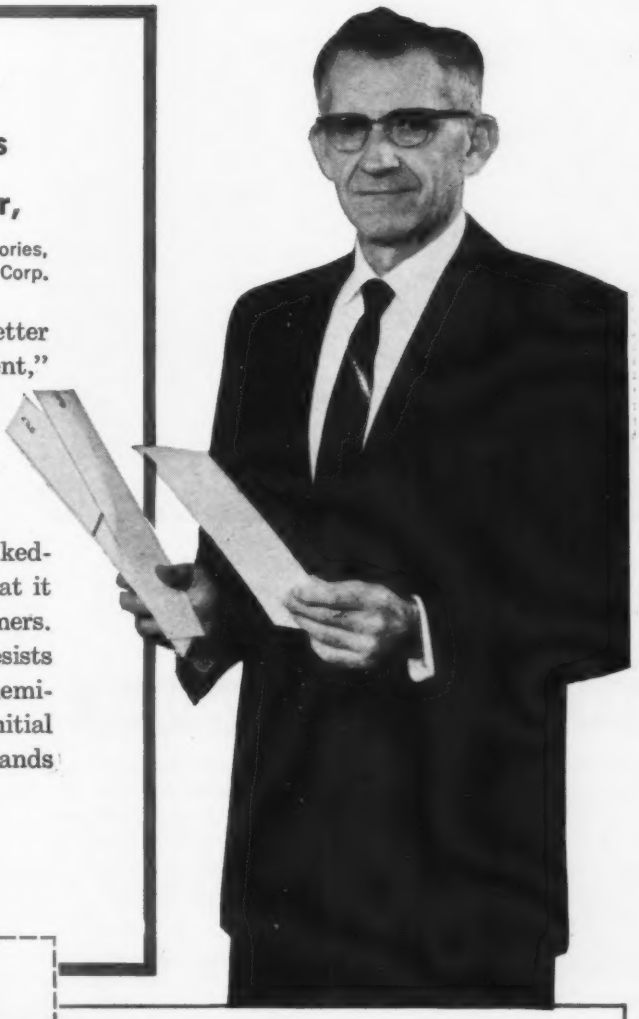
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

# USES DURACRON®

## of automatic washers and dryers

**satisfaction that Pittsburgh's new better adhesion, greater hardness and corrosion"...Says H. L. Farber,**

Manager, Control Laboratories,
Electric Appliances Division, Westinghouse Electric Corp.



• **"In our continuing research** for better finishes to use on our laundry equipment," continues Mr. Farber, "we have found that this thermo-setting enamel provides a number of important quality improvements all in one package.

• **"Practical experience** with this baked-on acrylic finish has demonstrated that it adheres excellently to metals and primers. It is unusually hard and tough, resists marring and the corrosive effects of chemicals and detergents. It has excellent initial whiteness and cleanability, and withstands staining and discoloration."

DURACRON can be used advantageously on many other products on which it is desirable to improve present baking enamels. We'll be glad to provide you with detailed information. Mail coupon at right for free booklet.

**Pittsburgh Plate Glass Company,**
**Industrial Finishes Division,**
**1 Gateway Center, Pittsburgh, Pa.**

Gentlemen: Please send me a copy of your free book on new DURACRON Acrylic Enamel.

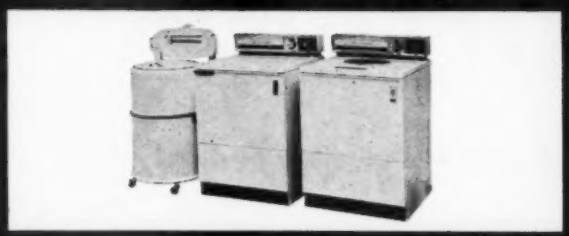
**Name**_____

**Address**_____

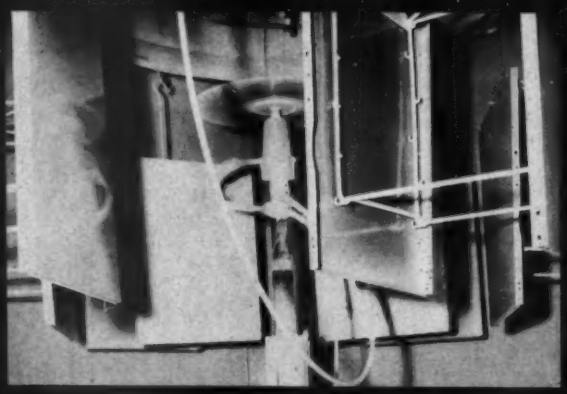
**City**_____ **County**_____ **State**_____

**Name of Company**_____

KELVINATOR
Washers and Dryers



Get their High Quality Finish with



RANSBURG NO. 2 PROCESS

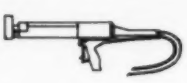
Kelvinator Division of American Motors switched from hand spray to RANSBURG No. 2 PROCESS Electro-Spray to meet increased production schedules . . . improve the quality of the finish . . . and lower finishing costs.

SAVINGS EXCEEDED EXPECTATIONS

Demonstration tests in the Ransburg labs indicated substantial savings in finishing costs, but in actual production, SAVINGS ARE EVEN GREATER than estimated. That's why Kelvinator is now considering RANSBURG Electrostatic Spray Painting for other products of their "white goods" line: Refrigerators . . . Home Freezers . . . Ice Cream Cabinets . . . Electric Ranges, as well as some components.

NO REASON WHY YOU CAN'T DO IT, TOO!

Want to know how Ransburg No. 2 Process can improve the quality of YOUR painted products, and at the same time, cut YOUR paint and labor costs? Write for our No. 2 Process brochure. Or, if your production doesn't justify automatic painting, let us tell you about the new No. 2 Process Electrostatic Hand Gun which can be used in either conveyorized, or non-conveyorized painting.



RANSBURG

RANSBURG
Electro-Coating Corp.
Box-23122, Indianapolis 23, Indiana


## Editor's mail

→ *from Page 15*

in receiving a copy of your METAL PRODUCTS MANUFACTURING magazine each month. There are a number of other departments in our organization receiving your very informative publication, and I feel that the Industrial Engineering Department would benefit also.

**Luke Cheng, Industrial Engineer**
**Clary Corp., San Gabriel, Calif.**

### In the field of aluminum

Gentlemen: Our company has been engaged in the aluminum anodizing field for a number of years and we are now entering the aluminum porcelain enameling field.

We feel that your magazine entitled METAL PRODUCTS MANUFACTURING would be of great value to us. We would certainly appreciate if our name was added to your complimentary mailing list.

**Denis Lamarche, Manager**
**Alanco, Ltd.**
**Montreal, Province of Quebec, Canada**

### Favorable comment

Gentlemen: Your May, 1960 issue has received much favorable comment here at Avondale, and we have had several requests for additional copies.

If at all possible, we would appreciate receiving six (6) additional copies of this issue.

**R. Raymond Ewart, Advertising Manager**
**Avondale Marine Ways, Inc.**
**New Orleans, La.**

### Additional copy for library

Gentlemen: We are on your mailing list to receive one copy of your publication, METAL PRODUCTS MANUFACTURING, each month.

Is there any possibility of your sending us two copies every month. The copy we now receive is circulated to 22 individuals throughout our organization, so consequently is never available for reference.

Anything you can do for us will be appreciated.

**Miss Virginia Pearson, Librarian**
**Merchandise Development Library**
**Sears, Roebuck and Co., Chicago**

We will be sending two copies in the future. Glad to know MPM is so well read at Sears.
The Editors

AN MPM STAFF REPORT

# NEMA Consumer Products Division Meets

## industry leaders discuss plans, progress and problems

THE CONSUMER PRODUCTS DIV. of the National Electrical Manufacturers Association met at the Edgewater Beach Hotel, Chicago, on June 1, 2 and 3. The general sessions were conducted by Division Chairman Homer L. Travis, Kelvinator Div., American Motors Corp.

### Appliance servicing

The first speaker was W. H. Wagner, vice president in charge of sales, Wisconsin Electric Power Co., and vice president, Association of Edison Illuminating Companies, whose subject was "Follow-up on appliance servicing" or the "Problem of appliance servicing." He stated that the AEIC had formed a service committee which had done a great deal of work on the problem. Included was a great deal of survey work.

The service committee has recommended the continuation of the servicing workshops which have been conducted during the past year. The committee is endeavoring to influence better design of appliances to make the servicing of appliances easier and less costly. In addition, they are endeavoring to improve the instruction booklets and literature developed by manufacturers and utilities so that they are, in short, better and easier to read. In addition, they feel that they must help in the improvement of the training of servicemen.

They feel that even if perfection is reached, it will take unending effort to keep it that way.

### The builder

James M. Lange, executive editor and vice president of *Practical Builder* Magazine, spoke on the subject "How to sell electrical appliances to the builder." He stated that the manufacturer must "play the field" in attempting to reach the builder as there is a constant change in builders — new ones entering the field — old ones leaving the field — and many different types of builders. He stated that it was a gamble for a manufacturer to tie up with one or a few large builders, as they may move out of the local market tomorrow.

Lange stated that the upgrading of kitchens and bathrooms is usually the starting place for remodeling of homes. There are 50 old homes representing opportunities for modernization for every new home that is built.

He urged that manufacturers give the builder more information on how to use their product. The builder needs good, worthwhile promotional material on new appliances. He maintained that price is not the builder's only consideration in selecting appliances. He feels that dependability, availability, appearance, low maintenance, warranties, sales literature, and quality are some of the other important things that can be used to sell the builder.

Lange feels that too much electric heat promotion has been written by individuals who are "looking through rose-colored glasses" when they speak of electric heat. He feels this material has been prepared without benefit of building facts and operating costs. One other point that Lange warned the group about was the national water scarcity and the high cost of water. He believes this represents a "bad omen" hanging over the appliance industry.

### LBE program

Frank Kitzmiller, inter-industry coordinator, Edison Electric Institute, brought the group up-to-date on what had taken place during the past year and what is now planned for the future for the Live Better Electrically Program. Kitzmiller stated that recent survey work indicates that the electrical industry has a great deal of work to do. Studies made among utilities and dealers indicate that they both feel gas is out-promoting electricity. A consumer study indicates that future promotion must appeal to the consumer on the basis of family benefits derived through "total electric living" rather than benefits derived by the housewife alone. In addition, he said that the studies showed the following: 1. The word "modern" means *appliances* in the eyes of the consumer. 2. Cost is not a major factor. 3. Women want new appliances, but need justification for their purchase. He stated that when it gets down to a question of whether the housewife will choose electricity or gas, their study revealed that the total movement is strongly toward more "electrical living." Finally, he stated that the words "flameless electric cooking" mean *safe, clean* and *modern* cooking to the consumer.

Promotion-wise, the "big switch" is the fact that gas is out-promoting electricity. In former years, the reverse was true. The electrical industry's job today is to hasten the trend of gas users toward "electrical living." A more com-

*W. H. Wagner, vice president in charge of sales, Wisconsin Electric Power Co.*

*Frank Kitzmiller, inter-industry coordinator, Edison Electric Institute.*

EXCLUSIVE MPM PHOTOS

*T. V. Fowler, vice president, sales to manufacturers, Owens-Corning Fiberglas Co.*

petitive "Live Better Electrically Program" is needed. "Flameless" is going to be used as the key word in electrical advertising. The new program will include 15 spreads in *Life*, 15 spreads in *Post*, and an ad in every issue of *Better Homes and Gardens*, and 5 pages in the *Reader's Digest*.

He presented the following three ideas to manufacturers: 1. Advertising must be competitive — state our case for electricity. 2. Tie in your advertising with the LBE Program — "flameless" and "total electric living." 3. The LBE Program is for the benefit of the entire electrical industry. As the industry prospers, so do all segments of the industry. All companies should contribute and have a voice in the program.

*E. R. Killam, director, Consumer Durable Goods Div., Business and Defense Services Administration, U. S. Dept. of Commerce.*

*P. F. O'Neill, national utility representative, General Electric Co..*

EXCLUSIVE MPM PHOTOS

*Gerry E. Morse, vice president, Minneapolis-Honeywell Regulator Co.*

### The sale of appliances

T. V. Fowler, vice president of sales to manufacturers, Owens-Corning Fiberglas Corp., spoke on the role that component suppliers should take in order to assist in the sale of appliances. He provided examples of what his company has been doing to help the sale of appliances through advertising. He made it clear that it was certainly not their place to attempt to tell manufacturers how to sell their appliances, but that a component supplier, such as his company, could greatly assist through properly prepared promotion and advertising.

As a follow-up to Fowler's presentation, Homer Travis commented on the greatly increased competition for the consumer dollar, with recreation, travel and many other products and services attempting to secure a larger share of the consumer dollar, and that such efforts by component suppliers certainly were welcomed and were most helpful.

### Foreign trade

E. R. Killam, director, Consumer Durable Goods Div., Business & Defense Services Administration, U. S. Dept. of Commerce, discussed "Overcoming obstacles to foreign trade." He stated that the Dept. of Commerce is attempting to do everything they can to promote the increased exportation of United States' products. In trying to carry this out, they are attempting to create an awareness within industry of the profit from, and the need of, export sales. He stated that too few companies are exporting today and that, for the most part, these are the larger firms. One way they are handling this is through the formation of 33 regional export committees, which will help to develop exporting. The department is also attempting to provide manufacturers with the tools needed to conduct a profitable export business. Also, the United States has been exhibiting in fairs throughout the world and will establish two permanent trade exhibits this coming year, one in London and one in Rangoon, Burma. One of the tools needed by a manufacturer is proper commercial information on foreign countries. The department is attempting to streamline and improve this information and to provide it more promptly. The department is also trying to get the various segments of government to take the necessary steps to help improve the conditions under which exporting must be handled at the present time.

To prove that a great deal of effort must be put forth in the improvement of exporting of major appliances, he pointed out that, in 1955, the United States exported $15½ billion worth of all products, of which $135 million were major appliances. In 1959, $17,600 million worth of all products were exported, while only $131 million worth of major appliances had been exported. This means that, while total exports went up 17 per cent, the exports of major appliances stayed practically static.

*Samuel Murphy, NEMA counsel.*

### Comprehensive Comparisons Committee report

P. F. O'Neill, national utility representative, General Electric Co., reported on the progress that had been made by the Comprehensive Comparisons Committee of NEMA, of which he is chairman. He stated that they have been working with utilities on a regional basis. They have found that many comparison tests have been made by utilities and are going to have an independent organization verify this information and then release it. In general, it is their aim to accumulate comparison information, conduct comparison tests, and then to publish and distribute the information.

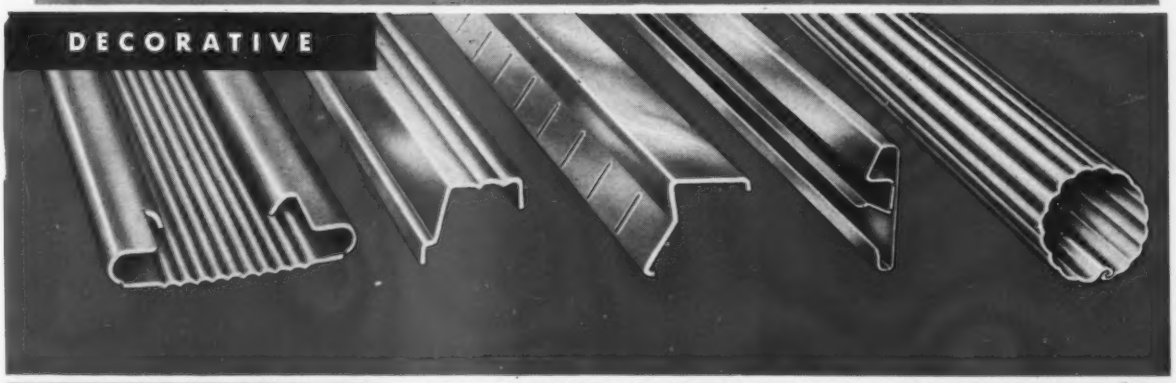
### Labor unions

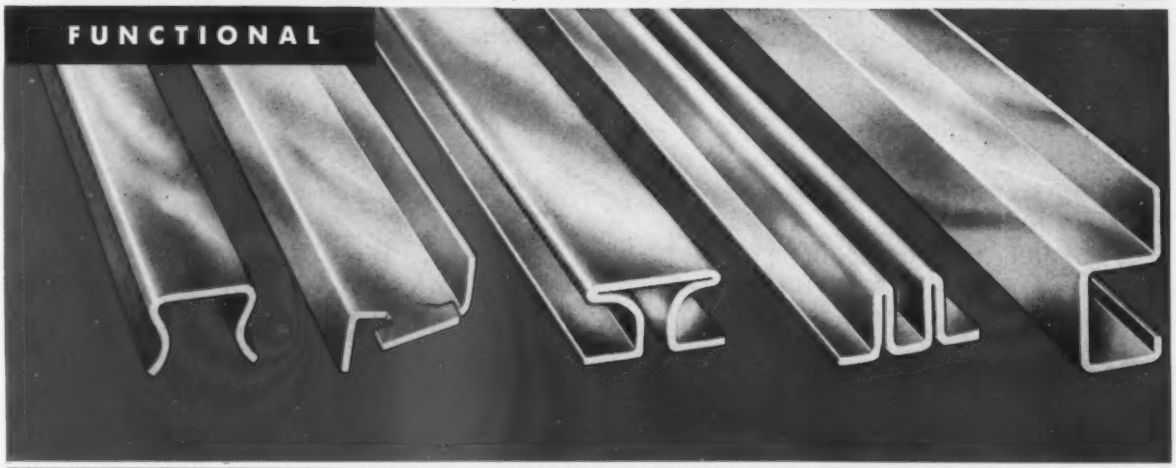
The last two speakers focused their attention on labor. Gerry E. Morse, vice president, Minneapolis-Honeywell Co., spoke on the "Development in collective bargaining in the electrical manufacturing industry." He feels that the year 1960 is a key year for collective bargaining. He touched on four points which made him come to the preceding conclusion.

First of all, he pointed out that the recent NLRB election held at Western Electric resulted in the unionized engineers voting out the union. He doesn't feel that this is a good sign from management standpoint, but rather that it is a warning that the IEU (the major union force in electrical manufacturing) will take over bit by bit, and it's just a

*to Page 42* →

# ENGINEERED SHAPES




Engineered shapes delivered punched, notched, pierced and cut to specific lengths can radically slash assembly costs and reduce purchasing headaches in your plant. These features can be built into your shapes, channels, angles or tubing by Roll Formed engineers to fit your specific needs. Roll Formed works in carbon, galvanized and stainless steel; aluminum, copper, zinc and clad metals. All of this means that you can have greater design freedom in a wide variety of metals without sacrificing assembly time. Let us review your prints and recommend an applicable section to save you money.

ROLL FORMED PRODUCTS CO

SEE OUR CATALOG IN SWEET'S

WRITE FOR BULLETIN 1017B
It shows how Roll Formed techniques reduce costs all the way down the line.

ROLL FORMED PRODUCTS COMPANY

MAIN OFFICE AND PLANT
3758 Oakwood Avenue
YOUNGSTOWN, OHIO

# MULTI-FUNCTION WILCOLATOR CONTROL

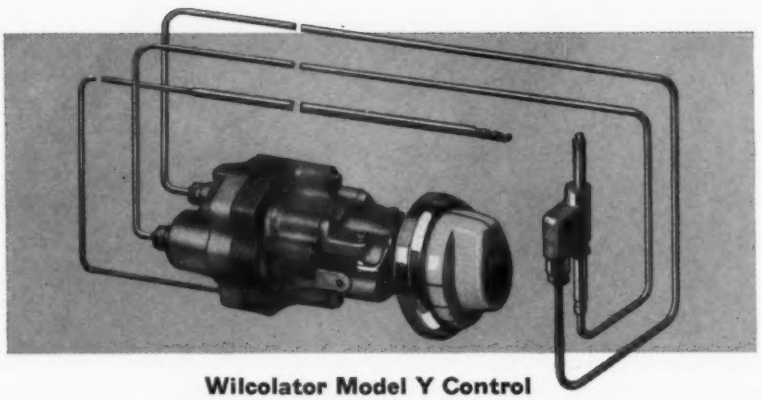
# is 4 ways better

**1** Lower installed cost

**2** Positive safety shutoff

**3** Smaller, more compact

**4** Simple construction, easier to service



**Wilcolator Model Y Control**

Temperature range:
200-500°F, plus broil

AGA rating, Btu/hr:
Manufactured gas—43,045
Natural gas—63,700
LP gas—136,000

The Wilcolator Model Y thermostat is a high-capacity unit delivering top efficiency as a gas valve, automatic pilot, oven temperature control, and pilot filter. Its advantages (shown above) add up to dollars-and-cents savings.

The Model Y is designed to be installed quickly and easily on any gas range . . . with a minimum number of fittings. At the same time, it is extremely easy to service because of its simplified construction and the fact that adjustments can be made from the front of the range. It is also available with filtered top burner pilot takeoff which eliminates a separate pilot filter. Throughout, the Model Y reflects the benefits of Wilcolator's 35 years' experience in the thermostatic control field. It is described in detail in Wilcolator's Bulletin 568 — copies are yours for the asking.

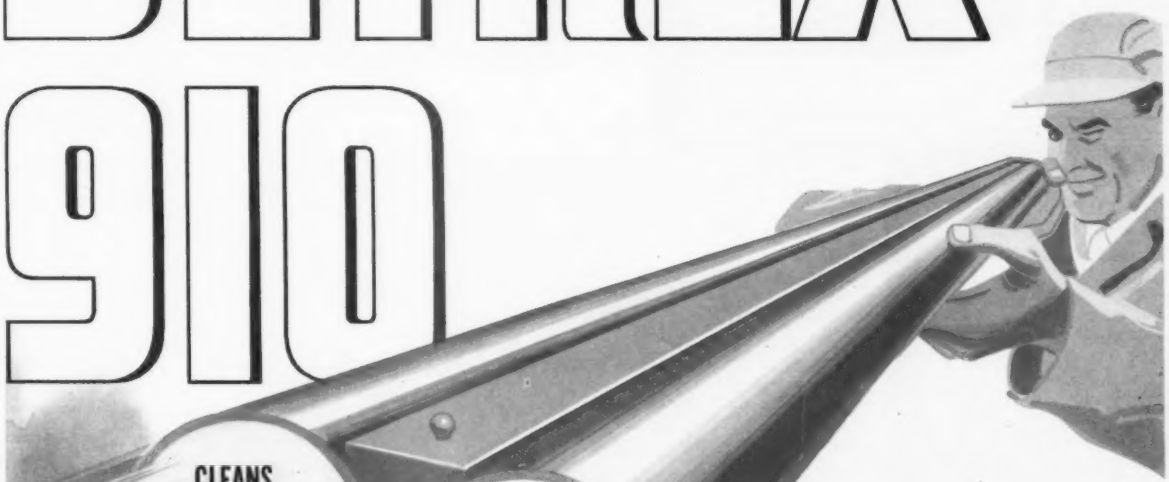
*Thermostats for Every Heating and Cooling Application*

THE Wilcolator COMPANY

THE WILCOLATOR COMPANY
1001 NEWARK AVE., ELIZABETH, N. J.

**In Canada:** Wilcolator (Canada) Ltd.
221 Evans Ave., Toronto 18, Ont.

# DETREX 910



CLEANS AND PHOSPHATE COATS

ELIMINATES HARDWATER PROBLEMS— CONTROLLED PH

## DOES IT WITH BOTH BARRELS

NOT THIS...

BUT THIS...

Here's a brand new approach to iron phosphate coating.

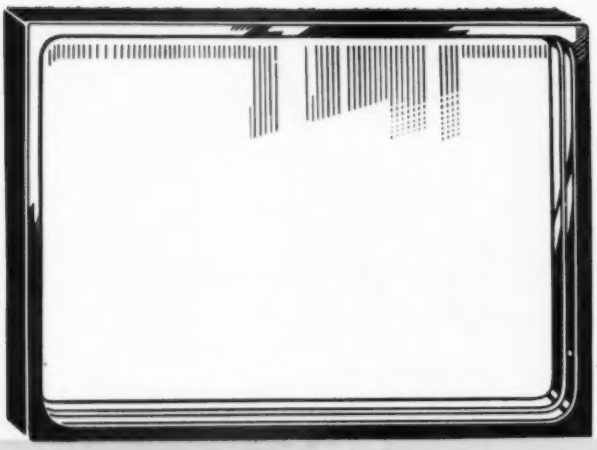
Detrex 910 chemically cleans and phosphate coats in one operation. It is designed for use in continuous mechanical spray washing equipment ranging from a 2 to a 6 stage operation.

**ARE YOU IN A HARD WATER AREA?** This field tested and fully guaranteed product is so compounded that it will accept at least fifteen times more alkali than other products and still remain in the PH coating range to produce superior iron phosphate coating. This unique alkali tolerance permits Detrex paint-bond 910 to be used in practically all areas of the United States without special PH control.

It's a "double-barreled" advancement that can mean important savings to you. Our field engineers will be glad to furnish the details.

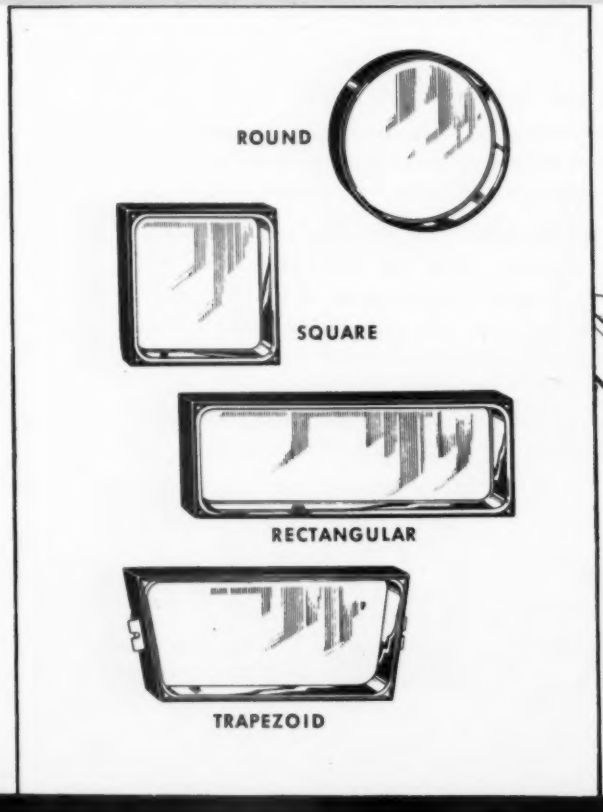
DETREX CHEMICAL INDUSTRIES, INC.

P.O. Box 501, Dept. MPM-760, Detroit 32, Michigan



# PERMA-VIEW®

## has gained World-Wide ACCEPTANCE



Alternate methods of attachment may be used

We can manufacture any shape, size, and thickness to meet your engineerin

Meterfabriek
Dordrecht, Netherlands

De Etna N.V.
Breda, Netherlands

Apparatenfabriek ATAG
Ulft, Netherlands

Oy Stromberg Ab
Helsinki, Finland

**PERMA-VIEW oven door windows have, for a number of years, been the accepted standard with leading range manufacturers throughout the United States. They have now gained world-wide acceptance. From Canada to Europe—to Australia or South Africa—PERMA-VIEW is recognized as the finest and most economical oven door window.**

Husqvarna Vapenfabriks Aktiebolag
Huskvarna, Sweden

Aktiebolaget Ankarsrums Bruk
Ankarsrum, Sweden

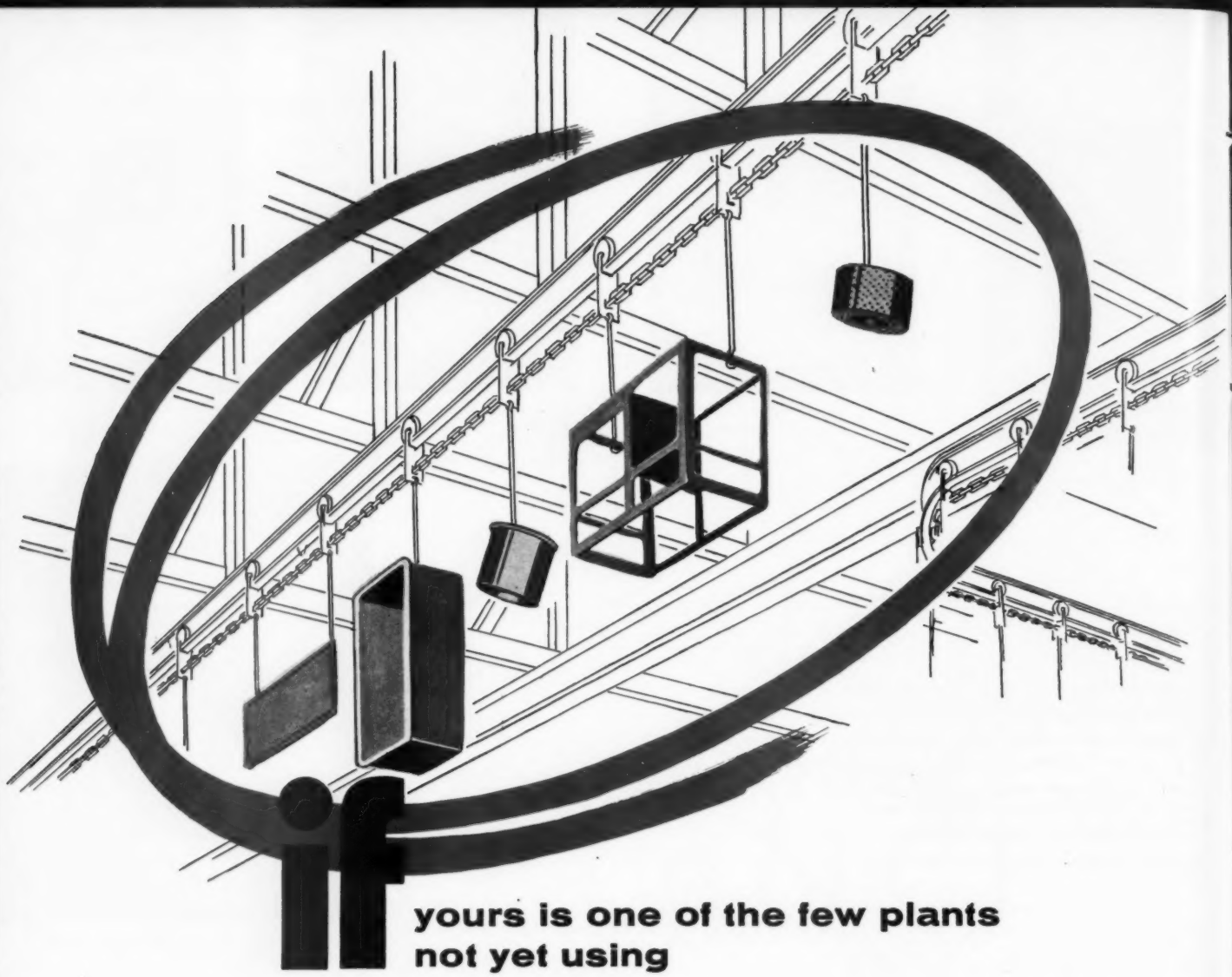
Mills Products, Inc. takes pleasure in displaying the ranges of six European manufacturers — all of which incorporate the PERMA-VIEW window. PERMA-VIEW — the accepted standard of the world.

Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and ecomony of adding this sales feature to your new ranges.

# MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD, WALLED LAKE, MICHIGAN • Phone MArket 4-1591

eering requirements.



**yours is one of the few plants not yet using**

# Chicago Vitreous

## LOW FIRING GROUND COATS

**and**

## COVER COATS

it will pay you to investigate all their advantages without delay. Your Chicago Vit sales or service representative will arrange a demonstration with results that will convince you they're all our customers say—and more!

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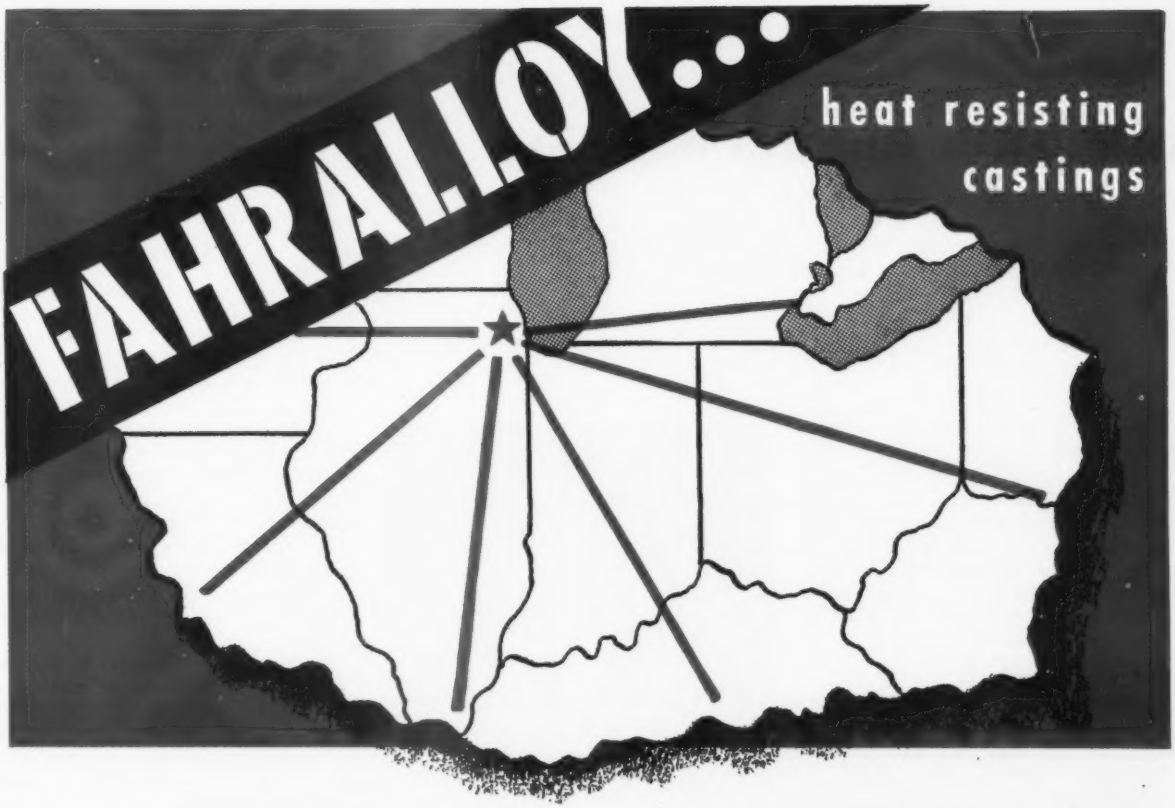


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# IAM 28th Annual Meeting

*AN MPM STAFF REPORT*

THE NETHERLANDS HILTON, CINCINNATI, Ohio was the scene of the Institute of Appliance Manufacturers' 28th annual convention and exhibit. Officials reported that the convention and exhibit, which ran from June 6 through 8, was attended by over 600. They also reported that they had a greater number of exhibitors than at any time in past history.

**President's report**

The meeting was kicked off by F. H. Guthrie, who delivered the president's report. He told members that he was looking forward to the last half of '60 with measured optimism. He feels that increased selling effort is definitely needed and that most members must immediately check their cost — earnings ratio. He stated that the industry still hasn't learned to stop price cutting, and that the appliance industry is getting a smaller percentage of the customer's spendable income. He recommended that the manufacturers do three important things: 1. Develop products with higher consumer appeal. 2. Keep prices at a level to make a decent operating profit. 3. Give dealers a profitable mark-up.

Guthrie then turned the program over to A. B. Ritzenthaler, who outlined "The Institute's program for the '60s." He stated that they had developed a new program, which includes new by-laws and a new organization. It is hoped that this will make IAM a much more flexible organization and, as such, of more value to its membership. The new plan calls for development of a closer relationship between industry suppliers and the manufacturers, and they are attempting to have a broader membership at a lower cost per member. The first initial step in this direction is the cutting of dues by 50 per cent.

**'60 — and the sixties**

The balance of the program through the three days consisted of five talks by members of the staff of New York University. The speakers and their subjects included "Wages, prices and profits," Dr. Jules Backman, research professor of economics; "Trends in collective bargaining," Dr. Emanuel Stein, head, Dept. of Economics; 'Training and selection of management personnel," Gen. John R. Beishline; "Appliance marketing — next step," Dr. Raymond D. Buteux; and "Where are we and where are we going"? Dr. Martin R. Gainsbrugh.

*F. H. Guthrie, president, The Newark Ohio Co., and president, Institute of Appliance Manufacturers.*

EXCLUSIVE MPM PHOTOS

In his discussion, Dr. Jules Backman stated that there are supposedly three principal reasons for price inflation. 1. Industry says it is caused by higher wages and fringe benefits. 2. Labor says it is due to higher profits. 3. The element of the federal government's spending. He stated that actually the labor bill has gone up about nine times as much as profits before taxes since 1948, thus it is evident that this area has been more of an influence on inflation than the profit structure. He went on to say that, in his opinion, the federal government's spending has played the biggest part in price inflation. He pointed out, however, that the appliance industry has not contributed to inflation in any degree as appliance prices have barely increased and have not increased as much as all other products and services. He went on to point out that, in other cases, prices have declined for appliances. He feels that three reasons for prices declining in the appliance industry are price cutting; over production resulting in dumping; and high saturation.

He stated that wages and the non-wage costs have gone up faster than productivity, and he fore-sees a continuation of the same trend in the years ahead.

In discussing "Trends in collective bargaining," Dr. Emanuel Stein stated that trade unions are committed to free enterprise and profit, yet they frequently hamper this system. In the overall picture, he anticipates that unions will continue to seek money for its membership and more security. The emphasis, however, has shifted to increased security and, as such, demands will be made for many of the following things: demand for SUB, expansion of seniority rights, attempts to limit freedom of employer to move plant locations, intensification of jurisdictional disputes, increased drives to organize white collar workers, and more political pressure to reduce the working day and week.

In closing, he stated that he doesn't feel that trade unions are a threat to our present system or economy. *This statement is contrary to the opinions as expressed by other speakers that our editors have heard at other recent meetings.*

*Dr. Emanuel Stein, head, Dept. of Economics, New York University.*

*Dr. Jules Backman, research professor of economics, New York University.*

# New Aluminum Forms, Finishing and Fabricating Techniques Offer New Design Possibilities in Ranges and Ovens

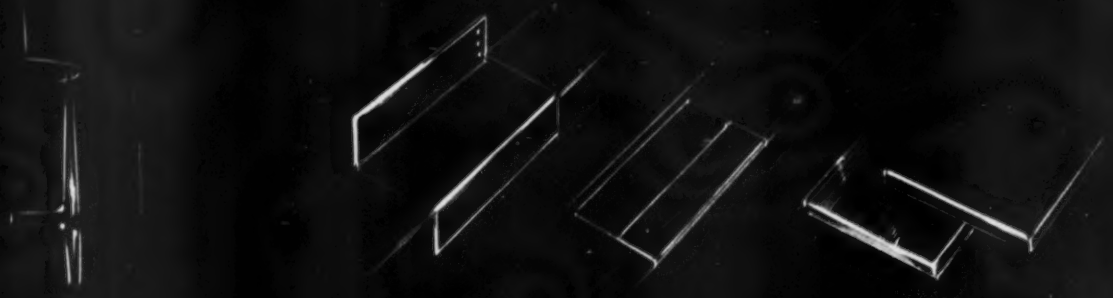
SEE NEXT THREE PAGES→

TEXTURED SHEET WITH EMBOSSED CONTACT AREA

CONCEALED RANGE AND OVENS
WITH HINGED WORK SURFACE

REYNOLDS ALUMINUM

# COUNTER TOP RANGE



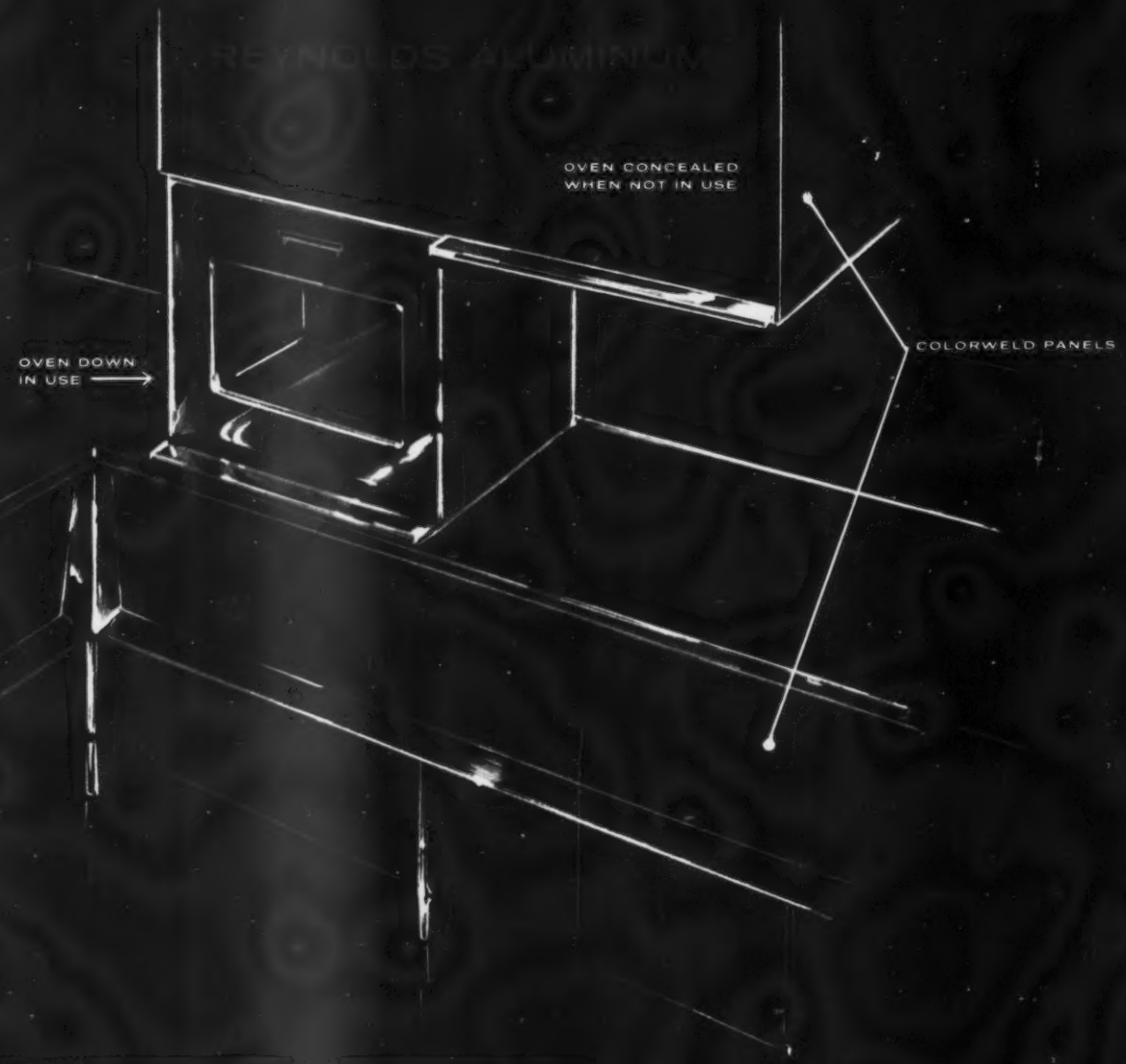
CAST ALUMINUM LEGS FIT INTO EXTRUDED SECTION AND FASTEN TO BOTTOM OF CABINET

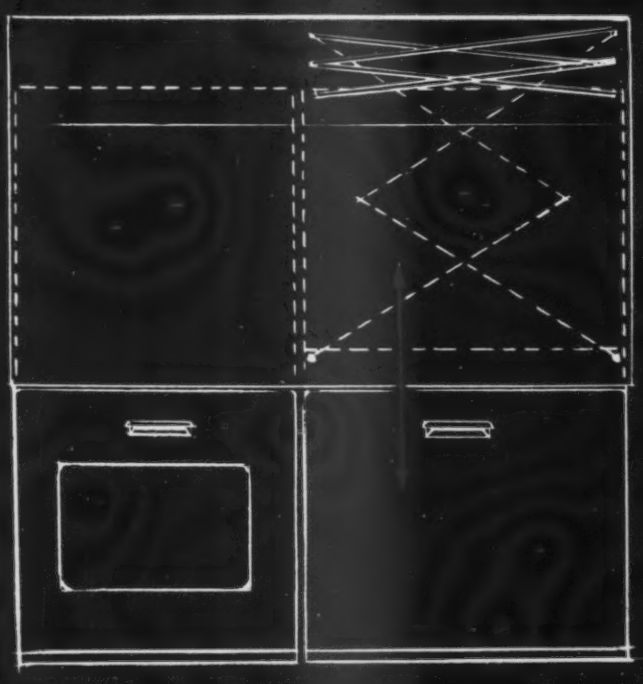
FULLY OPEN POSITION

CLOSED

SANDWICH PANEL OF ALUMINUM WRAPPED INSULATION WITH FORMICA COUNTER TOP

REYNOLDS ALUMINUM



## PULL DOWN OVENS

OVEN SHELLS WOULD BE
COUNTERBALANCED

How aluminum offers range and oven manufacturers

# VERSATILITY and ECONOMY

## in Styling, Fabricating and Finishing

The sketches on the preceding pages by Reynolds Styling and Design Department suggest a few of the many new ways that strong, lightweight, rustfree aluminum can contribute to modern range and oven design. There are almost unlimited combinations of design possibilities with aluminum, because aluminum is the most versatile of all metals. Here are a few examples of styling, fabricating and finishing techniques both possible and practical with aluminum.

**In fabrication,** aluminum can be drawn, extruded, cast, stamped, roll formed, expanded, perforated or pierced. A wide choice of *attachment* methods is also available: welding, mechanical fasteners, tabs and cast pegs, bolts and rivets, metal stitching and epoxy resin adhesives are among the most common. In *finishing,* a wide variety of sales appealing colors can be easily obtained through painting and color anodizing. A variety of surface textures is also available.

This versatility also points the way to manufacturing economies. For instance, modern techniques in design, tooling and assembly permit higher rates of production with aluminum at low cost. Aluminum extrusions, with their nominal die costs, are a good example. Aluminum's light weight cuts costs of certain reinforcing or supporting parts. Lightweight aluminum also lowers handling and shipping costs.

**Economies in finishing** are also worth investigating. One-Side-Bright aluminum can be used to eliminate costly buffing operations. Prepainted aluminum sheet (Reynolds Colorweld Aluminum Coil) is ideal for applications calling for a painted stock. Colorweld Aluminum Coil can be formed and fabricated.

Embossed or brush finished aluminum sheet, in standard or special designs, requires no additional finishing operations—permits low cost styling "change-overs". Laminates of aluminum with vinyl plastics or wood cut costs and weight in sandwich panel and other decorative or functional part construction.

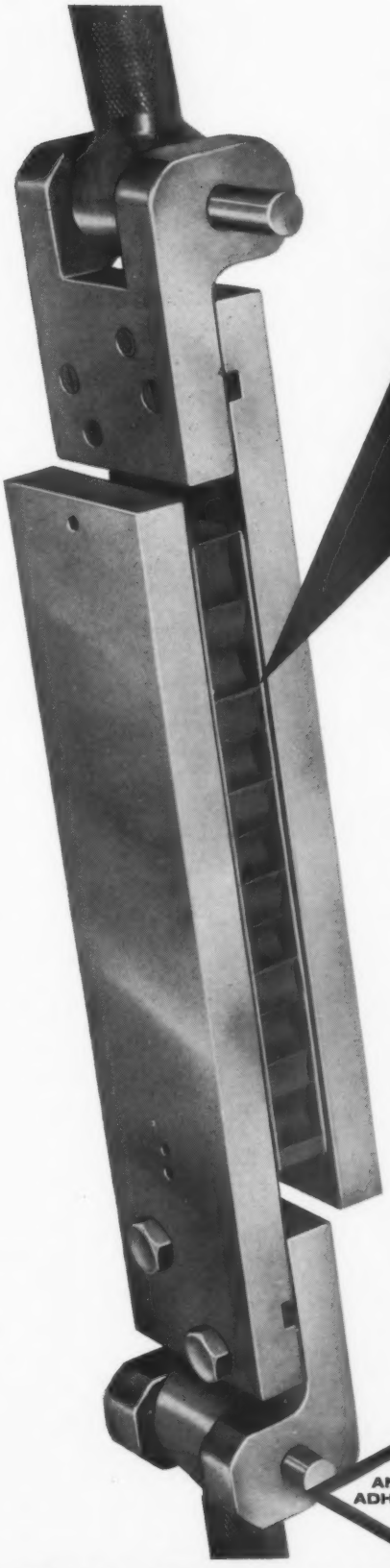
New ideas for using aluminum in refrigerators and other appliances are being developed constantly. Reynolds Styling and Design and Product Development groups are ready to assist your own stylists and engineers in putting the newest and best aluminum forms, finishes and fabricating techniques to work in your products. Reynolds fabricating facilities are also at your service to assist in actual fabrication of finished aluminum parts. For highest quality aluminum mill products or for details on these services, contact your nearest Reynolds branch office or write *Reynolds Metals Company, P.O. Box 2346-AW, Richmond 18, Virginia.*

**NOTE:** Before you make or buy any appliance part, have it designed and priced in aluminum. Remember—basic material costs do not determine part costs. New techniques and processes—applicable only to aluminum—can often give you a better product at a lower final cost.

# REYNOLDS ALUMINUM

Watch Reynolds TV Shows: "Bourbon Street Beat" and "Adventures in Paradise"; and, resuming in October, "All Star Golf"—ABC-TV

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM



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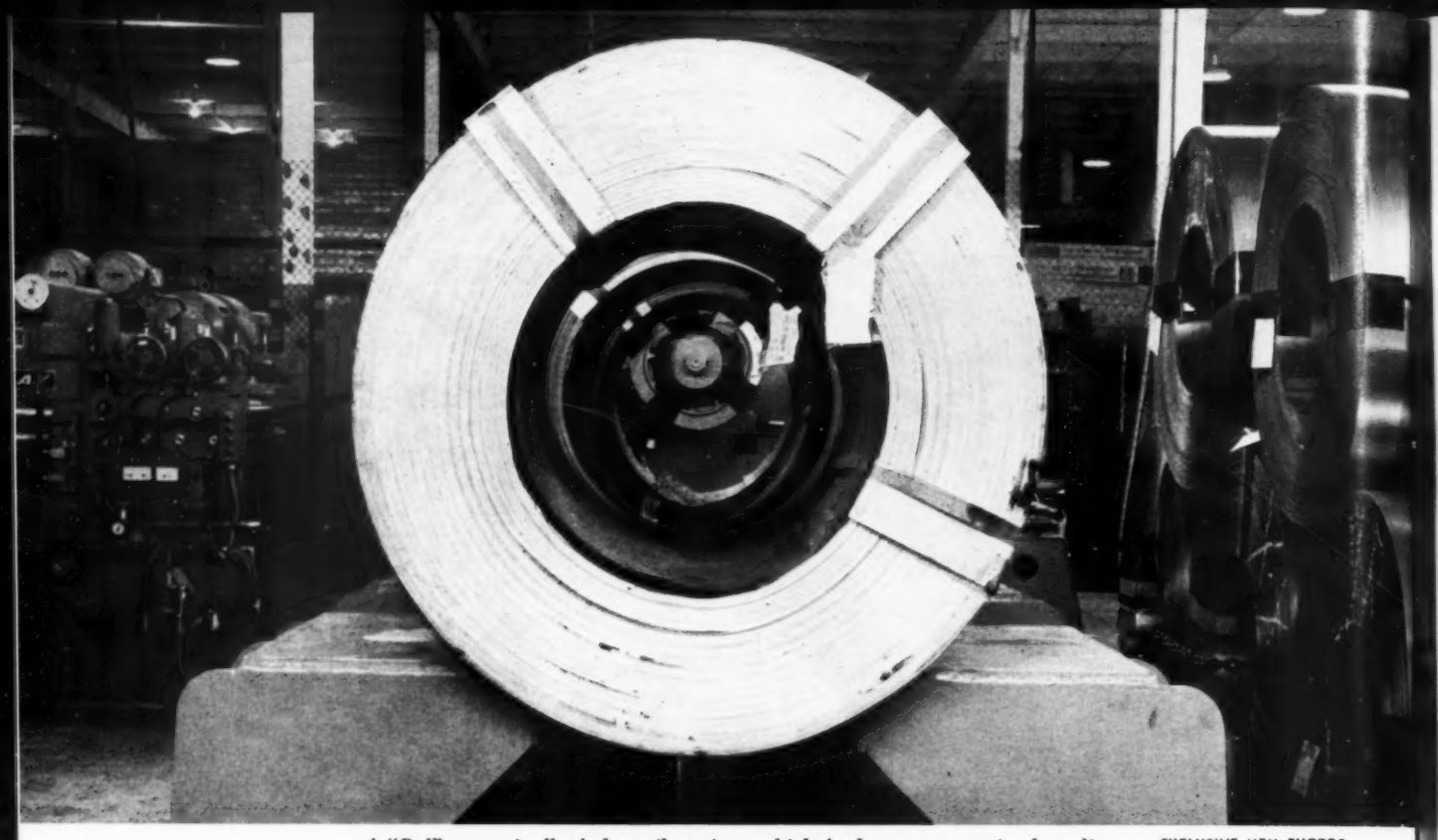


*A "Bull's eye view" of the coil stations which feed new automatic shear line.* EXCLUSIVE MPM PHOTOS

# $3.5 million plant expansion at Tappan

## capacity at Mansfield increased 50 percent with new fabricating and finishing equipment

THE TAPPAN NAME has been well known to the appliance industry for over 79 years. The Tappan name has been synonymous with quality in the gas range field since 1930, and since 1955 has been an increasingly important factor in the electric range field.

The Tappan company at Mansfield, Ohio has remained well in the forefront as an "independent" appliance manufacturer during recent years when consolidations have been the rule rather than the exception.

MPM editors, learning of the company's current expansion program, contacted W. R. Tappan, president, and A. B. Ritzenthaler, vice president-sales, to arrange a plant editorial visit for the purpose of finding out what makes this company "tick."

The resulting plant visit revealed a 40-year old, multi-story manufacturing facility that is clean, orderly, and equipped for the production of quality home appliances at a reasonable factory cost.

### $3.5 million for expansion

An expansion and modernization program just completed involved approximately $3.5 million. One of the principal outlays was for important items of fabricating equipment, including a complete new shearing line and 15 new presses in the stamping department, ranging from three 300-ton presses down to a number of 150-ton punch presses for a variety of work. A new organic finishing system at the Mansfield plant involved an expenditure of $230,000, including the system and an on-the-roof building for housing the system. At the Murray, Ky. plant, there were major expenditures for porcelain enameling facilities and a completely automated foundry. Another segment of the total expenditure was represented by improved materials handling and in-process handling of the semi-fabricated and fabricated parts.

Company officials readily admit that they would have welcomed the advantages of this expansion program at an earlier date, if it had been feasible, because during 1959, for instance, it is estimated that a 25 percent greater overall business would have accrued to the company had the plant facilities been available for handling it.

Results from the expansion program were immediate. Current figures show that the program has increased the overall capacity by 100 percent at Murray, and 50 percent in finished products capacity at the Mansfield plant. All figures are based on two eight-hour shifts per day. Obviously, this leaves a further expansion of seven hours' production available as required.

### An organization project

With justifiable pride, Tappan plant executives point to the "rather unique" method of handling the expansion program. It is pointed out that the entire program was developed and consummated without the benefit of outside help. Personnel from manufacturing and engineering functions were selected and

"welded" into a plant planning, working force that handled the planning, the execution, and controlled expenditures.

The working group included industrial engineering, production engineering, production control, and factory supervision. The multi-plan operation was tied together by a steering committee comprised of R. M. Lamb, vice president; Vern Kyle, general manager of the Murray plant; Truman Clark, general manager of the Mansfield plant; and John Mabee, Gil Dobson, and Dan Meckley, superintendent, manager of industrial engineering, and manager of manufacturing and engineering, respectively, at Mansfield.

Dan Meckley commented on the results of this plan as follows: "We feel that we were able to pay attention to the small things which make the difference between a good layout and an excellent layout. At the same time, there was vested in the people in the working group a feeling of responsibility and being a part of the program that ordinarily is not accomplished when it is handled by a single departmental group."

### Production based on sales

Tappan's policy is to build its products based on actual orders from the field. With this system, it is common practice to deliver finished, packaged products from the factory for the distributor or dealer three weeks from the time the order is received. A manufacturing scheduling meeting is held every Friday for the consideration of the current orders. The scheduling system has sufficient flexibility to provide for stopping production on any particular line or model on a minute's notice or, conversely, to step-up production on individual models, based on field results. Company management has proved to its own satisfaction that this offers a distinct advantage as opposed to high-production, automated lines.

Scheduling at Tappan is not in any sense a simple problem. There are 10 different assembly lines, which tends to complicate production. The variety of products includes 30 and 40-inch "400" equipment, 30-inch gas and electric free-standing ranges, 40-inch gas free-standing ranges, two different sizes of gas and electric built-in ovens, gas and electric built-in tops, the cabinet which goes with the "400" equipment, electronic ranges, plus one line for new products.

The increased production figures quoted, plus worthwhile cost savings in many departments, would seem to offer ample justification for the careful planning which preceded the expansion and rehabilitation program.

## FABRICATION

INCLUDED in the recently completed Tappan expansion are new steel storage and shearing facilities, served by an under-roof railroad spur and truck dock; a space saving die storage department; and a completely rearranged press department.

### From sheets to coil

A basic change from the use of steel sheets to coil is reflected in the new shearing line, a radical change in metal and finishing specifications, and in final product. The new shearing line is designed to operate with coils up to 10 tons and from 26 gauge to 14 gauge. In practice, the company uses this equipment for the most part for 36 to 48-inch wide coil, in gauges from 26 to 14.

This new line is different from earlier lines that have been shown in MPM in

*This view shows three-coil loading facility, with expanding uncoiler in background feeding strip into the leveler.*

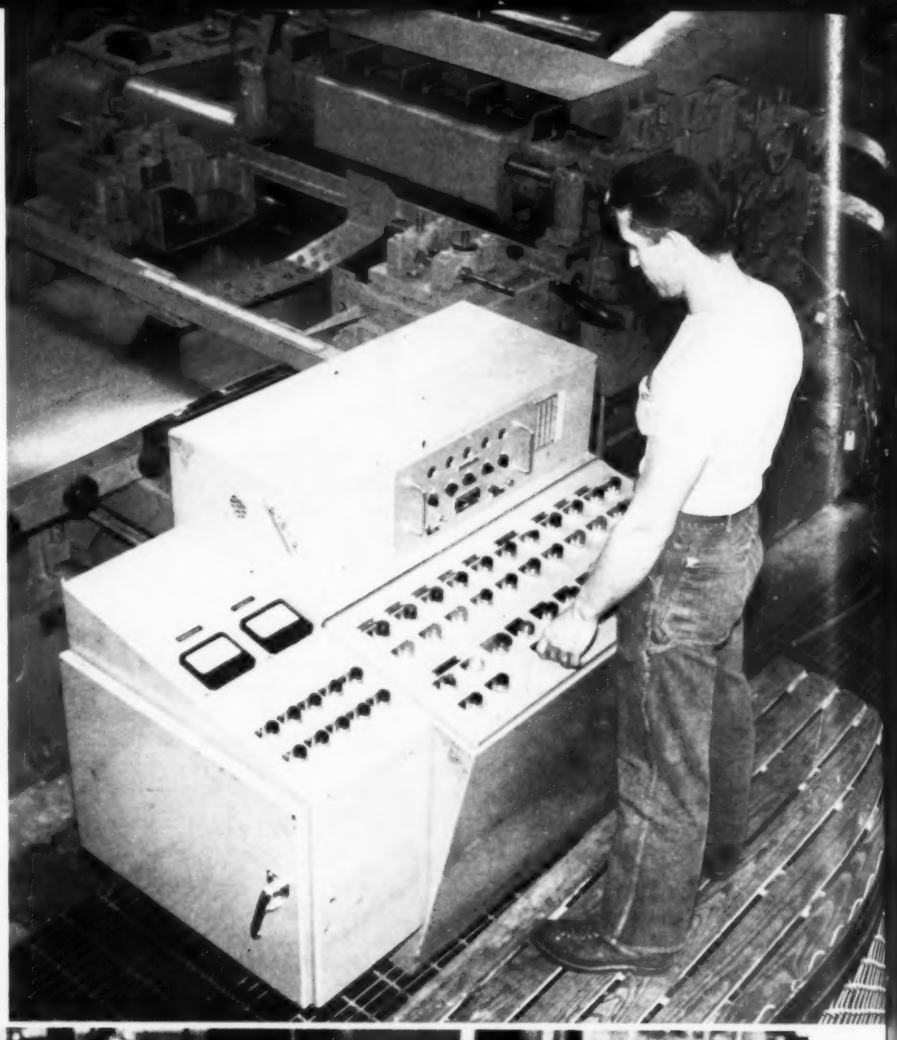
that it has a more elaborate coil loading section, and it incorporates the latest electronic methods for measuring — an all-decimal system. (The counting rolls are 1½ feet in circumference and, during this length of travel, there are 1800 impulses into the counting system.) Transistors are used instead of relays for the control of the shear length.

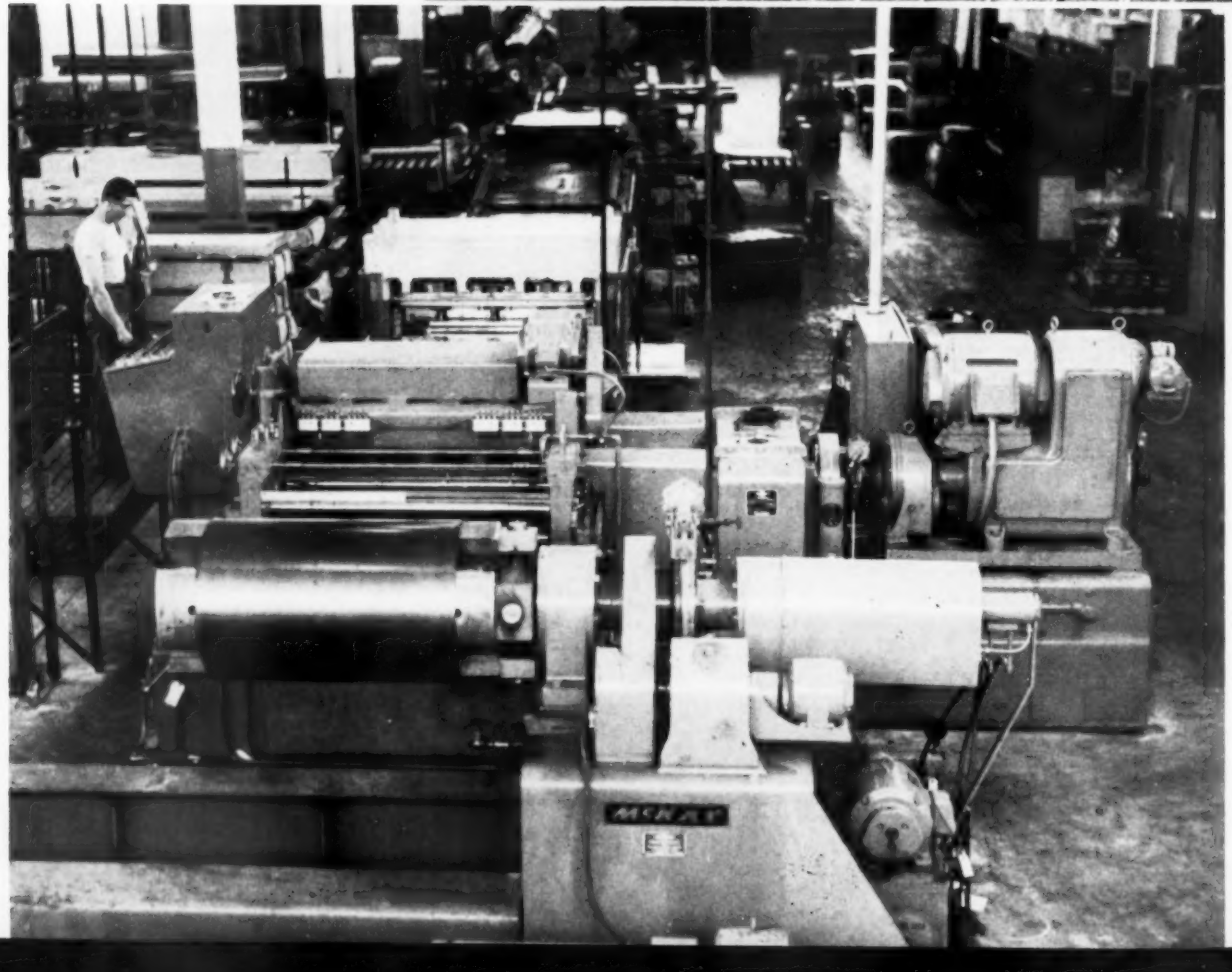
The maximum length of cut on the equipment can be 999.99 inches. It is anticipated that there may be occasions for cutting coil into sheet for storage, in which event it would be logical to shear into lengths up to ten feet. Approximately 35 percent of the total steel used in the plant is side trimmed and sheared on this equipment, and requires no further handling except the necessary drawing or forming operations. Sheets that require further shear-

EXCLUSIVE MPM PHOTOS

*(Right) — A single operator at this console can control all operations on the automatic shear line. The operator at the control board is supplied with a template showing the size to be cut and information on the type of material. He then sets the controls and starts the electronically-controlled equipment.*

*(Below) — "Bird's eye view" of the automatic shear line. Coil feed equipment is out of photo in left foreground.*





ing to size pass on immediately from the end of the automatic line to adjacent conventional power shears.

### The automatic shear line

The new automatic line is serviced by an overhead bridge crane, which places coils on three loading stations. Individual coils are moved on an electrically-powered coil buggy which is equipped with a hydraulic lift. The coil is shifted to the uncoiler, which expands hydraulically to hold the coil and pay it off to the leveler. The uncoiler acts as a free-wheeling mechanism with a brake. It is equipped with jogging motors so that it can feed the stock to the leveler at the start or can rewind any unsheared stock.

The leveler (the heart of the device) can prepare the metal for cutting in one of two ways. It is equipped with a 17-roll leveler, connected with a five-roll "flattener." The 17-roll leveler is used for all cold rolled material and enameling iron (except for No. 3 finish steel which is to be nickel and chrome plated). Suppliers have indicated that the No. 3 finish material should not be put through a 17-roll leveler, so this type of stock goes through the five-roll leveler to "flatten out" the coil set without disturbing the surface of the metal.

The leveler also drives the mechanism which accelerates the die for the flying cut. This mechanism is geared directly to the leveler to insure that the speed of the die during the flying cut is the same speed as the strip going through the leveler. The cut-off press is a stationary type press, with the die on tracks so that the die can move horizontally with the strip during the cut. As the pieces are cut, they are fed onto a belt which takes the cut blanks to a piler). The piler for this setup has three stations. The first station is for any rejects such as the first cut, which crops the end of the strip, and the second and third stations are for actual piling of the material. The piler is so designed that the stations can be used interchangeably without stopping the machine. Consequently there is no need to stop the machine to change or unload piles of cut steel.

The leveler has an additional feature — a built-in edge trimmer for trimming the edges of the strip to the desired width. If the width of the coil is the exact width of the part needed, it should not be necessary to use the edge trim; however, most coils are used for several different parts and, obviously, edge trimming depends upon the required width. This system is used, of course, only when coil width is slightly over the size of the part needed. When the width of a coil is a multiple width of a part, then edge trimming is bypassed.

*Unloading sheared sheets from piler with fork lift truck.*

The scrap from the edge trimmer is fed out of the machine to a baller for rolling the edge trimmings into compact balls for scrap.

The machine will operate at speeds up to 180 feet a minute, the limitation being the speed of the cut-off press which operates up to 45 strokes per minute. Length requirements to take full advantage of the machine speed of 180 feet per minute are therefore based on a minimum sheet length of four feet.

The installation of the automatic shearing equipment led to a standardization program on types of metal used. Earlier specifications included cold rolled, No. 3 finish cold rolled, enameling grade stock, aluminum coated stock, sheets with a modified black oxide finish, etc. It is planned that future requirements will include only those metals that are available in coil. As indicated earlier, this change carries through metal finishing and final product specifications.

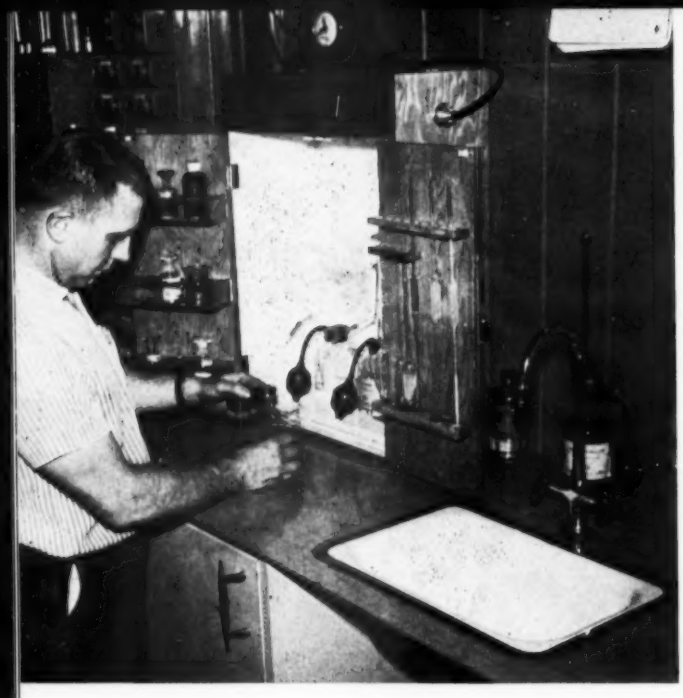
The coil line is operated by two men: the operator controls the machine through the push-button console for controlling all the parts of the equipment from a centralized point, and the second man gets the coil ready for loading, assists in loading on the uncoiler, starts the scrap into the baller, and prepares the pilers so that there will be one ready to receive the sheared steel.

### Other improvements

Die storage in the Tappan plant has been given careful attention, both from the standpoint of space saving and accessibility for handling. Thousands of dies of all sizes and shapes are being stored with aisle space only 40 inches wide compared with the 12-foot aisles previously required. Space is saved through the use of narrow aisles between 8-foot high die racks, and by using an especially designed truck which will service an aisle only 40 inches wide. The die carrier, located on the truck bed, moves laterally between parallels on which the dies are stored, and feeds the die onto the truck bed at right angles to the direction of the truck movement. The dies are then taken to an adjoining marshalling area and transferred to a standard lift truck for delivery to the presses.

After a research job on the press departments, the Mansfield and Murray plants were designed and laid out to include fifteen new presses. Through rearrangement of existing presses, all parts now go through straight line production without doubling back for press operations.

*Organic Finishing* →



# ORGANIC FINISHING

*(Left) — Conventional titration tests are conducted every two hours to control the concentration of the alkaline cleaner, chromic acid bath, and phosphate and accelerator.*

EXCLUSIVE MPM PHOTOS

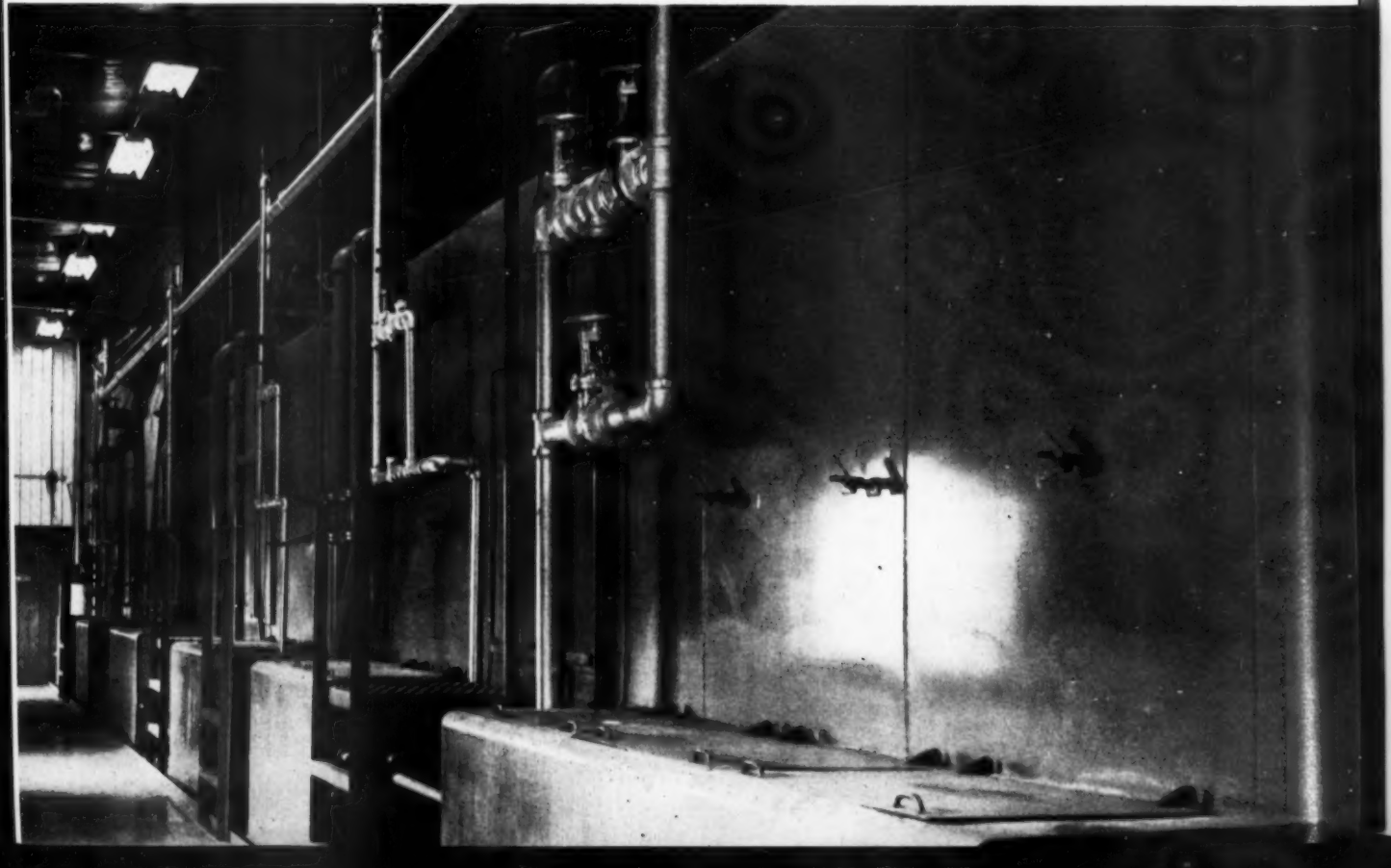
THE NEW ORGANIC FINISHING SYSTEM at Tappan is built entirely on the roof of the plant. It is set up to do washing, phosphatizing, dip painting, spray painting, and plastisol coating. The company formerly used a half dozen different materials, including japan, oxide coatings, and special mill sheets. The new system provides for standardization with only two or three types of finishes and fewer types of steel.

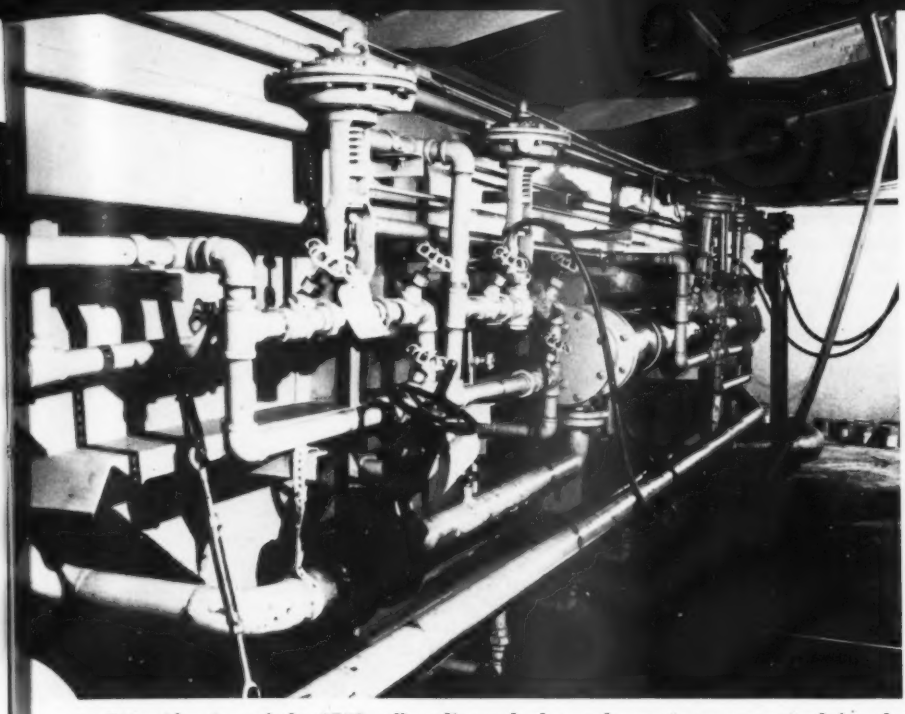
In referring to the new installation, Gil Dobson, industrial engineering manager, had this to say: "The purpose of getting a new paint system was, first of all, to improve quality and, second, to reduce our finishing costs. Labor savings were achieved by attaching the various operations together, instead of operating a separate metal preparation and a separate painting installation. The improved finish has been achieved through better metal preparation and better paint formulations. For the dipping process, we are using an epoxy-type paint, which is considerably more durable and scratch resistant than the japan finish and specialty finishes used previously. While mostly japan has been replaced, the new finish is also taking the place of the specialty coated metals.

"The spray paint is an alkyd amine urea formulation, and our metal preparation includes the so-called "cold" phosphatizing.

"In addition to savings in productive labor, we gained a valuable savings in floor space by putting the new system on the roof over the press department,

*This side view of the cleaning and phosphatizing machine shows the supply tanks and part of the distribution system.*





*This side view of the 2700-gallon dip tank shows the equipment required for the elaborate supply and control system. Note floor track for moving tank from conveyor line when spray finishes are used.*

with only a loading loop on the main floor. Thus we were able to salvage practically the entire space required by the old system — approximately 4,000 sq. ft. We estimate that this saving in floor space alone would approximate $40,000."

### 300 parts to finish

The paint system must handle all of the necessary organic finished components for 90 different models in the range line. This consists of about 300 different pieces when all models and sizes are considered. About 12 major parts are spray coated, and the balance go through the dip system.

### Metal preparation

The cleaning and phosphatizing machine is 100 feet long. It contains seven stages: (1) alkaline cleaner, 180° F., 45-second cycle; (2) hot rinse tank at 130° F.; (3) rinse at room temperature; (4) phosphatizing (zinc phosphate coating at 130° F.); (5) rinse tank at room temperature; (6) conventional chromic acid rinse and (7) demineralized rinse. The deposition of the phosphate on the ware is 200 milligrams per sq. ft. (one side measurement).

Following metal preparation, all the ware goes through one section of the baking oven, which serves as a dry-off oven for the ware. About a three-minute dry-off is sufficient at 350° F. This comes into a room temperature cooling loop prior to dropping to the dip tank.

### Dip tank — 2700 gallons

The ware drops on the loop of the conveyor into a 2700 gallon dip tank. This is the epoxy-resin-type finish in a gray color. A pump recirculates the complete volume of the tank every 20 minutes. The pump system includes cartridge-type filters, and temperature is maintained by a hot and cold water heat exchanger to a mean temperature of 90° F., plus or minus 2°. Two immersion-type thermocouples serve to control the heat and cooling. Air valves are used to control the flow of hot or cold water.

While the tank is in position, all ware is automatically dipped. When the dip line is changed over to spray work, a pneumatic cylinder is used to remove the tank from under the conveyor, so that it is bypassed by the conveyorized ware.

The dip tank area is completely enclosed and air sealed, and the vapors are all confined to this area, not only for the purpose of confining the vapors, but to control the flow of the finish and to promote uniform drain properties on the ware.

### Oven designed for complete five minute purging

Following the dip, the conveyor loop then goes into a 200-foot oven, heated to 370° F. The conveyor takes two 280° loops in the oven for a 13-minute cycle. The oven is heated by a five million Btu indirect gas burner and has a fan capacity of 80,000 cfm. This oven is so designed that it is possible to get 13 complete air changes per minute, if and when required for specialized finishes. This oven is capable of developing 550° F. carefully controlled heat. Should there be a requirement for a complete switch in materials, which calls for purging the oven, a complete purging can be obtained in five minutes.

The organic finishing system conveyor carries the baked ware to a main floor marshalling or storage area. From this marshalling area, the parts are distributed to the various assembly lines.

For the twelve major parts which are spray coated with the alkyd amine urea-type coating, the dip tank is removed from the line, and the ware then passes through two staggered hand spray booths. Both booths have water curtains, and conventional hand spray equipment is used. All paint is supplied to the spray operator through a cir-

*Loaded conveyor enters the cleaning and phosphatizing machine at left. The conveyor at right background is carrying inside bodysides to the unloading station.*

*Harold A. Moyer, foreman in charge of organic finishing, demonstrates how the complete finishing system can be controlled from a central point.*

*(Right) — Photo shows the arrangement of tanks in the paint storage room. Materials to be sprayed are pumped direct from this storage room to point of application.*

EXCLUSIVE MPM PHOTOS

culating system from the paint storage area which is housed in the end of the complete new allsteel building.

**Control procedures**

Application weights for the organic finishes are as follows: dipped ware — .7 to 1 mil baked coating; sprayed ware — 1 mil to 1½ mils total baked coating.

The alkaline cleaner is controlled by conventional titration method every two hours. The addition of phosphate and accelerator are controlled by chemo-feeder-type pumps which can be set to control the additions from two ounces per minute to sixteen ounces per minute. A titration control is used, and the metering pumps set to maintain the required concentration.

Conventional titration is used for chromic acid bath every two hours.

The epoxy-type paint is reduced roughly four to one, with xylol type solvent. Viscosity of 30 seconds with #2 Zahn cup is maintained, plus or minus two points.

The spray baking enamel is reduced with the same type thinner as the dip material on a four-to-one basis, but checked for a viscosity of 25 on a #2 Zahn cup.

Materials are received and stored in 55-gallon drums on channel steel racks. Storage is convenient to the adjoining plant roof, and the plant parallels the railroad track, so that the drums can be loaded immediately into the storage room from cars or trucks by air hoist.

In questioning what effect the addition of many components to organic finishes had on the requirements for porcelain enameling parts, the general foreman for finishing said, "The addition of items to the organic finishing line has had little or no effect on our requirements for porcelain enameled parts. As a matter of fact, a number of parts that were formerly used in specialized metals, particularly in our "400" line, have been converted to porcelain enamel under the new setup."

The new paint system has been in operation since the middle of February of this year. Here's what a plant supervisor had to say about the new system: "This system was designed and built completely by the supplier. We did salvage one spray booth out of our old system, and a few of the components were purchased independently, but all of the rest was built under a single contract. The system started with practically no bugs, and has done a very excellent job from the very beginning."

---

**EDITOR'S NOTE:** In addition to the plant executives mentioned in connection with the Tappan expansion program, the editors of MPM would like to give personal credit to the following for their assistance in connection with the development of this feature:

J. S. LEMUNYON, *manager of facilities planning*
D. L. SNYDER, *plant engineer*
R. G. VAN TILBURG, *steel planner, production department*
C. A. MCCAFFERTY, *general foreman, finishing (organic & ceramic)*
H. A. MOYER, *foreman, organic finishing*

*(Left) — MPM Field Editor Ray Schuster in a Dictet interview with Truman Clark, manager; Dan Meckley, manager of manufacturing and engineering; and Gil Dobson, manager of industrial engineering. (Below) — John Mabee, factory superintendent, in meeting with Dobson.*

*For what's new in cleaning/phosphating*

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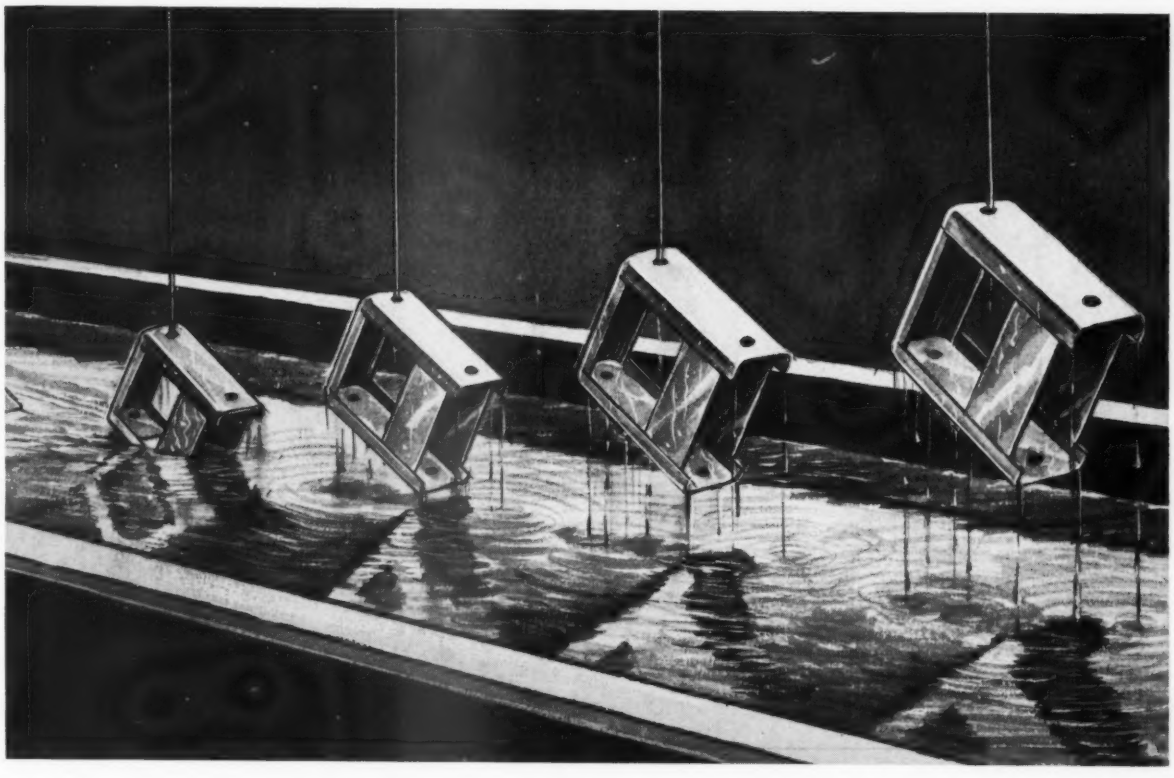

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# PEI "explores new dimensions"

THE PORCELAIN ENAMEL Institute held its annual Mid-Year Conference on Tuesday and Wednesday, May 24-25, at the Hotel Biltmore in New York City. Under the billing, "Exploring New Dimensions in Porcelain Enamel," top-flight group of speakers from the fields of advertising, art and manufacturing presented an extremely interesting program.

A disappointing feature of the two-day meeting was not in the program but in the attendance. While those attending the meeting might be characterized as "top quality," the number in attendance could hardly be considered representative for the industry. Only about 30 were present at the second day's session, including some advertising representatives and PEI personnel.

MPM PHOTO

*Billie Lacy, of the Porcelain Enamel Institute, shown with the hang-up fireplace and porcelain enameled wall decorations in one corner of the industry exhibit at the National Design Center.*

*AN MPM STAFF REPORT*

### Advertising objective — sales

A program on education, publicity and advertising was presented by six representatives of the PEI agency, Palmer, Codella and Associates. In opening the discussion, T. Norman Palmer stressed the fact that every activity in relation to advertising must be geared to one objective — sales. In referring to a recent "IBM" research project, he suggested that a prospect must, first of all, have knowledge of the company; second, comprehension of the product and a conviction that it is the right product; then comes sales. He pointed up the part that advertising, education and publicity can logically play in this picture. Advertising and publicity, for example, do a great deal more than a salesman in regard to "awareness." Education is extremely important when it comes to "comprehension," as is a salesman's personal contact. When it comes to the point of "conviction," the salesman's role becomes increasingly important.

### Porcelain enamel — white paper

Tom Lee, industrial designer and consultant to the National Design Center, spoke before the PEI group. Among his interesting comments were the following: "Porcelain enamel is like white paper. It's what you do with it or what you put on it that counts." Lee said that the architects and industrial designers are far behind in their knowledge of the material. In referring to color, he said, "No color is bad; it's only the way you use it or what you use it with."

### Electroluminescent lighting

Fred Wolfe, manager of Sylvania's panelescent sales, had an extremely interesting presentation and demonstration of the progress made by Sylvania in connection with the development and production of electroluminescent panels. There seems little doubt that this comparatively recent development could well find a market in many different fields. Its effectiveness for architectural use and for specialized signs can be readily demonstrated. Sylvania feels that there is a whole new area for porcelain enamel in electric signs in the highway marker type of installation, where the development affords unusual

*to Page 104* →

## NEMA meets

→ *from Page 20*

further example of the independent union's failing, and of the larger production worker-based unions becoming larger and stronger and unionizing the "white collar" areas.

Next, he pointed out that the expiration of the agreements between the unions and General Electric and Westinghouse would take place this year. He feels that the unions will ask for 1. SUB (supplemental union benefits), 2. Severance pay, 3. Increased retirement and layoff plans.

He discussed the uncertainty of collective bargaining today. He feels that collective bargaining is in trouble in 1960 and that it is in trouble because of "efficiency of operations." He believes companies must improve the efficiency of operations to meet foreign and domestic competition and this is the area in which a stalemate will be reached.

He then discussed the elements of the general, economic and political background as it is today. He feels that politics in this presidential year will loom large. At the collective bargaining table, management will meet not only the union, but also politics. His great fear is that if a stalemate is reached, a so-called third party representing the people will enter into the picture.

He feels manufacturers are going to have to reduce costs of indirect workers.

Morse stated that the key in collective bargaining is for each manufacturer to look to his own problem, not to consider what has been done in other industries and by other manufacturers.

Samuel Murphy, NEMA counsel, discussed "Application of anti-trust laws to labor unions." He summarized the past history of anti-trust laws in their relationship to labor unions, and brought up the fact that they at one time were very much under prosecution by anti-trust laws, and that it wasn't until comparatively recent times (firmly established by Supreme Court ruling in 1940) that labor unions were made immune to anti-trust laws.

He pointed out that there had been increased discussion in recent years to the effect that anti-trust laws should once again apply to labor unions in order to equalize the balance of power and take unions out of their preferred status.

Murphy stated that, in his opinion, anti-trust laws do not apply to labor. Rather, he is in favor of the passage of new legislation, which will place more restrictions and regulations on unions. One of the keys, of course, is to provide new legislation which will limit collective bargaining, so that unions are able to conduct collective bargaining only with one plant or one employer — not on an industry wide basis.

THIRD ANNUAL
SPECIAL SECTION
AUTOMATIC MERCHANDISING
INDUSTRY

# Metal Products Manufacturing

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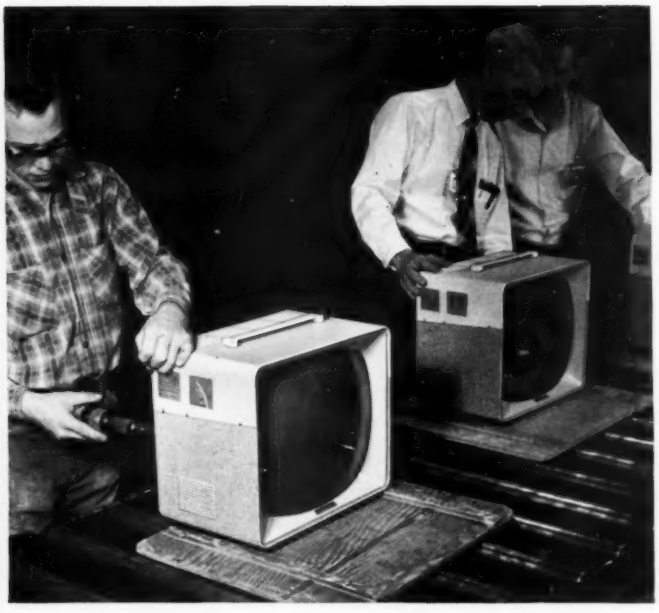
FROM RAW METAL TO FINISHED PRODUCT



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21 C

EDITOR'S NOTE: In preparing this special section devoted to the automatic merchandising equipment industry, our editors contacted every manufacturer of automatic merchandising equipment, counselled with the industry's national association, and sent editors and photographers into the field to secure feature material.

This represents a "thank you" note to the executives and plant men throughout the industry for their cooperation in connection with the development of this current story of an increasingly important industry.

The equipment, products and plant operations which are considered to be of interest to MPM readership are increasing each year. It is, therefore, necessary for editors to be selective in the material to be included in this section. Other fine products will be shown in later issues as space permits.* This section has been planned so there should be some material of interest for each reader of MPM.

**A design story on a currency-handling automatic merchandiser is in preparation and will appear in a future issue of MPM.*

# IN THIS SECTION


**AUTOMATIC MERCHANDISING . . . PAST AND PRESENT**
by Thomas B. Hungerford ..... V-5

**AUTOMATIC VENDING FACES THE SIXTIES**
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**"UNIFIED FRONTS" FOR FULL LINE VENDING** ..... V-8

**VERSATILE COIN CHANGER SIMPLIFIES AUTOMATIC MERCHANDISING** ..... V-10

**RUDD-MELIKIAN BREWS GOOD NEWS FOR COFFEE LOVERS** V-12

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**AUTOMATIC MERCHANDISERS FOR THE "SOARING SIXTIES"** V-16

**THE FUTURE OF AUTOMATIC MERCHANDISING**
what the leaders predict for their industry ..... V-22


# CONTINUED STORY OF A GROWTH INDUSTRY

For the third consecutive year, the editors of MPM tip their collective editorial hat to the automatic merchandising equipment manufacturers and the automatic merchandising industry.

We believe that MPM readers will be impressed by a number of basic facts developed in this special section, including: (1) The ability of the equipment manufacturers and their component suppliers to meet increasingly difficult requirements for complete vending service on a rapidly increasing number of merchandisable products. (2) The speed with which automatic merchandising, through coin-operated vending equipment, is increasing both in the number of products vended and the overall value of the vended food, merchandise, and services. (3) The ability of the industry to unify and solidify the interests of three distinct groups — manufacturers of vending machines and components; suppliers of the products to be vended; and the operating companies that place and service the machines on location.

While the equipment shown and described in this section will give some idea of the engineering and manufacturing advances made by the manufacturers of automatic merchandising equipment, a study of the engineering and manufacturing facilities of these companies by our editors indicates that there will be equally noteworthy advances announced during the months and years to follow.

Some idea of the importance of the growth factor in this industry can be gained by reading Mr. Hungerford's statement (page V-5), in which he reports that from an estimated sales volume for the industry in 1925 of $30 million (consisting largely of candy, chewing gum, nuts, and soft drinks), today's volume exceeds $2 billion annually, and is forecast to exceed $4 billion within the next decade. (In addition to the products vended earlier, machines now offer a complete line of foods and soft drinks, both hot and cold, books, newspapers, stamps, toiletries — yes, and even men's underwear.)

It seems clear that one reason for the continued healthy advance of this industry toward better engineered and manufactured equipment and toward an ever-increasing sales volume to the public is the cooperation that has been achieved between three divergent interests, through a strong national association.

A look at the future for automatic vending can best be answered by reading Mr. Donahue's statement (page V-6) in which he says, "The market for automatic vending in the sixties is limited only by the numbers of people in the world — people at work and people at play. It is within these two areas that we can best examine the expected triumphs and problems of the approaching decade . . . automatic vending is truly a growth industry . . ."

MPM for the third successive year salutes the ingenuity and progressiveness of the engineers and plant men who produce vending machines and components for taking advantage of technological advances in connection with the development of machines for meeting the future needs of the automatic merchandising industry — "even before the needs are apparent . . ." At this point there seems little question that there will be worthwhile developments and advancements to report each succeeding year.

Dana Chase

EDITOR AND PUBLISHER


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(Inland "job-tailored" Cold Rolled Sheets)

# FORMABILITY

Like the supple bending . . . the creation of new shapes and forms by this highly-trained dancer . . . steel, too, must be endowed with similar ability . . . FORMABILITY. If it is to meet the varied needs of today's manufacturing practices, steel must be produced for ease of fabrication . . . must form dependably without springback or surface disturbances.

FORMABILITY, as a working characteristic, is carefully built into Inland Cold Rolled Sheets. Prime consideration is the use for which the steel is ordered. Inland makes certain it *knows* its customer's requirements . . . works always to satisfy such specific needs.

In Yoder forming and tangent bending of refrigerator wrappers, Inland Cold Rolled Sheets do not flute (panel) or spring back.

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# Automatic merchandising . . . past and present

*by Thomas B. Hungerford* • GENERAL MANAGER, NATIONAL AUTOMATIC MERCHANDISING ASSOCIATION

NO OTHER METHOD OF RETAILING has forged ahead with such rapidity and captured the imagination of so many people in so short a time as automatic merchandising.

Statistics show that the growth and stability of automatic merchandising has been nothing short of phenomenal.

In 1925, for example, the estimated sales volume for the industry was $30 million, and the products vended by machine were limited to candy, chewing gum, nuts and soft drinks.

Today, automatic merchandising is a $2-billion-plus business and vending executives agree that this sales volume is likely to double in the next decade. The growing list of products vended by machines today includes coffee and other hot beverages, cigarettes, cookies, crackers and biscuits, fruit and fruit juice, hot foods, ice cream, milk, sandwiches and pastries. In addition, venders for books, ice, newspapers, postage stamps, laundry, parcel checking, weighing, and toiletries are commonplace.

The National Automatic Merchandising Association, the voice of vending in America, is unique among trade associations. What makes us so is that our membership is made up of three distinct groups — manufacturers of vending machines and machine component parts; suppliers of the products sold through the machines; and operating companies that place and service the machines on location.

There is total cooperation between these three groups who have voluntarily banded together, in spite of diverse interests, to promote the over-all best interests of their industry and the American public. This is extremely significant for, even though these individual groups sometime have internal differences of opinion, they stand firmly together when confronted with a problem that affects the automatic vending industry as a whole.

Each of these three groups, through NAMA, has played an important part in bringing automatic merchandising to its present stage of maturity.

The manufacturers, through their years of research and development, constantly have improved machines. By designing and perfecting new equipment to merchandise the host of products which are added to the automatic vending field each year, they have opened up new avenues of retail service to the public.

Suppliers of vendible products, in turn, have worked to improve their goods and packaging design to meet the expanded markets which automatic merchandising offers them.

The operating companies — the vending service specialists — through their direct contact with the consumer, continue to play a key role in the automatic merchandising business. Because they retail goods directly to the consumer, they are able to advise both the manufacturer and supplier as to what the public wants. Basically, the vending specialist executive is an expert in merchandising and servicing. He provides the capital and know-how and is able to relieve the location owner of the countless details involved in providing the public with the service of automatically dispensed products.

In many ways we can think of vending machines as automatic salesmen. They can operate 24 hours a day, 365 days a year without vacations, time off, or boosts in pay. But they do not substitute for people. In most cases they merely increase the capabilities of an already existing distribution setup. More importantly, they free salesmen from routine jobs and give them the opportunity to spend more of their time in demonstrative selling.

Almost every category of automatic merchandising experienced an increase in sales during the past year alone. But one aspect of vending in particular, employee feeding, has opened an entirely new avenue of service and sales for machine manufacturers and vending specialists.

Although the sale of hot foods by vending machines represents a comparatively small percentage of the total volume of vended items at this time, the long-term potential is bright indeed. Statisticians report that over half the country's 65 million-plus workers eat at least one meal away from home daily, and so do the more than 10 million students.

Next year we will celebrate the 25th birthday of the founding of NAMA. In that short time, we have grown from a handful of companies to a membership of over 1500 companies.

Most of our members count themselves among the ranks of the small businessman. It is a fact that almost 91 percent of vending machine operating companies have 10 or fewer employees, while 32 percent are strictly one-man businesses.

However, even this pattern has experienced some change. Until recent years, almost all companies engaged in automatic merchandising were privately owned. Today, an increasing number of these companies are offering stock to the American public. And millions of dollars are being invested in companies which build or install the silent salesmen because of the growth potential of our industry.

The National Automatic Merchandising Association is proud to represent this bustling industry. We will soon be looking back with a good measure of satisfaction on our first 25 years of stability and progress as a unified industry. Our look back, however, will be only a quick one, since we are moving forward at too fast a pace to dwell for long on the past.

A bright future is before us and we stand on the threshold of the most exciting era in our history.

# Automatic vending faces the Sixties

*by Thomas B. Donahue* • PRESIDENT, NATIONAL AUTOMATIC MERCHANDISING ASSOCIATION

IT WAS ONLY ABOUT 30 YEARS AGO when men of vision and imagination were pioneering the modern field of automatic vending. Many went on to success.

But, as in many fledgling enterprises, some of these men experienced failure. The principal reason: Their mechanical abilities were unequal to their flights of fancy.

Today, the "operation bootstrap" phase of our industry's growth is behind us. Our past failures have made us stronger. We no longer dissipate our energies with complete flights of fancy. We now have a positive approach to new products and new ideas and possess the necessary means, experience, "know-how" and seeds of greatness to bring out industry to a pinnacle only dreamed about by our pioneers.

Automatic vending, as we consider it today, concerns itself with the automatic sale of merchandise, food or services by machine — at the drop of a coin. The insertion of money into a machine is *the* distinguishing characteristic of this type of selling.

The market for automatic vending in the "Sixties" is limited only by the numbers of people in the world — people at work and people at play. It is within these two areas that we can best examine the expected triumphs and problems of the approaching decade.

There will be more people working in the "Sixties" and they will have more disposable income for their work and their ever-lengthening play periods.

The job of our vending specialists will be to serve people at work by following them to their place of business. In doing so, we will save money for management and at the same time provide more and better service for vending's ultimate customer — the consumer.

Vending specialists also will be following their customers to their place of play. This means, more than ever before, that automatic vending must extend its operations to include every type of location where people gather for fun and relaxation.

Because the success of our activity will depend upon our ability to do, and our attitude toward doing, we must ask ourselves several questions, namely: Can the automatic merchandising industry meet the needs of the "Sixties?" Do we have the ability and proper attitude as an industry to do the job?

If we can believe most of the forecasters, our general economy is entering upon a golden era of expansion and growth. This expansion and growth is not only predicted for the North American continent but, to some degree, for all the world.

It is therefore logical to assume that our automatic vending industry, in the "Sixties," will be riding the crest of a basically sound and expanding economy.

In America, we have the ability to produce because we have trained and efficient manpower as well as intelligent management. We possess machinery and methods that are constantly being improved by research and development. We are rich in basic raw materials as well as new materials which, having practical applications, are also the result of research and development. And finally, Americans produce because of the availability of money and capital coupled with a business and political climate that is conducive to trade.

Focusing our sights to get a clearer image of automatic vending in the "Sixties," we find that, as an industry, we do not have enough trained and efficient manpower — but we are busy training it.

Our industry is fortunate because we are now experiencing a new public acceptance which has never before existed. This public acceptance will ultimately draw more and better educated men to the vending business, and every level of operating and manufacturing, from general administration and sales to engineering and production, will benefit.

Automatic vending is truly a growth industry and has more than its share of romance and excitement. Because of this, our manpower problem in the "Sixties" will be further diminished because the increasing numbers of young people in our population tend to move toward the new and dynamic growth industries.

Automatic vending is moving at tremendous speed in the development of new machinery and methods.

Our manufacturers are now developing machines to satisfy the future needs of our industry even before the needs are apparent to many of us. We are now using — and will be the future beneficiary of — technological advances such as new fuel and power concepts; prefab structures which can be used for outdoor retail vending stations; new cooking methods as well as improved insulation and refrigeration techniques; new metallurgical and chemical developments brought about by the needs of the space age; and electronic data-processing equipment and business machines. We also will reap the benefits of electronic advances being made in radio, television, telephone and allied industries.

*to Page V-20* →

# PRESSURE SENSITIVE MIRRO-BRITE made with "MYLAR"*

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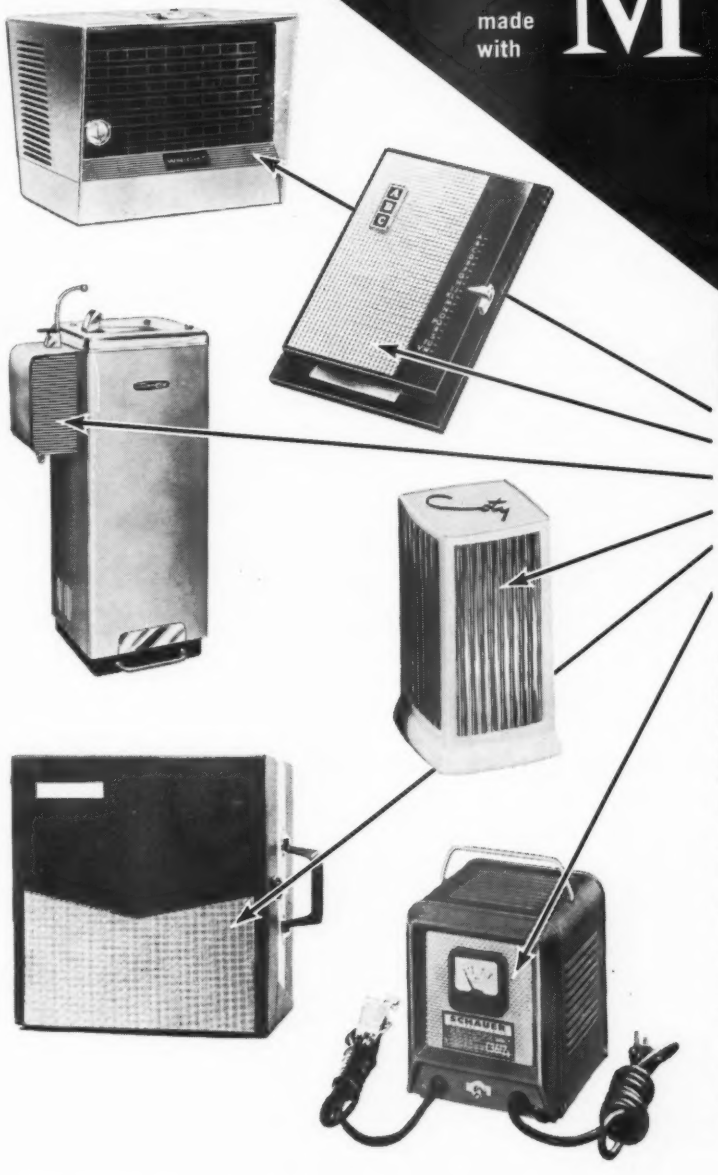

**PICK UP SAMPLE**
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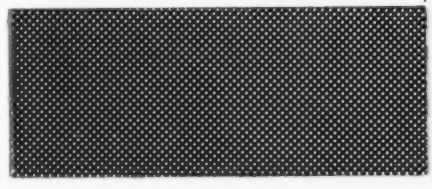

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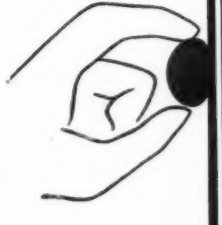
# "Unified fronts" for full line vending

TODAY'S AUTOMATIC VENDERS may be mounted in a variety of settings to enhance their beauty. The venders, polished to high mechanical perfection and having such facets as coin-changers, multiple-pricing mechanisms and attractive product display, may change their personalities to suit the atmosphere where they are placed.

The simplest correlated vending installation may be achieved by placing matching models of equipment side by side for a functional unit of trim, neat appearance. Going a step farther, each vender may be enclosed in a housing which is available as a stock item. These housings are of uniform height, and each has a horizontal fluorescent light under a canopy at the top. Front panels are cut to fit the "faces" of various models of vending equipment. When two or more of these housings, complete with venders, are placed together, they give the impression of a unified installation, and they have the advantage of flexibility, as they may be re-arranged at will.

The most attractive settings for vending equipment are found in installations which are entirely custom-designed for specific locations. These are the result of careful planning by professional designers. Distinctive housings can be created for as many units as may be required for "full line service" (or complete meals through automatic equipment) and such facilities actually become part of the interior or exterior area where they are located. Some exterior housings, now installed in service stations, are of prefabricated metal parts; others are of wood, painted or covered with vinyl.

These custom installations go beyond the vending equipment itself to include room layout, furnishings and appointments, and decorative treatment of both service and dining space.



*This automatic unit at a classroom building at the University of Kansas uses shades of coral and turquoise in the custom panels which cover the individual venders. A mural above the vending equipment and modern furnishings and appointments extend the decorator theme.*

### Units have metal housings

One of the latest developments in custom vending installations is a series of five metal housings enclosing eight venders each, located at service stations in the Charlotte, N. C. area. The installations, composed of predesigned and fabricated parts in combination with stock components, are part of a test pro-

*Methodist Hospital, Indianapolis, largest medical facility in the state of Indiana, recently installed this modern automatic food unit to replace a soda fountain snack bar. The new unit is saving the hospital around $500 a month. The housing for the venders cost approximately $2,800. Room layout and decorative scheme were furnished by The Vendo Co.*

gram currently being conducted by Esso Standard, Division Humble Oil & Refining Co., in cooperation with The Vendo Co., Kansas City vending equipment manufacturer, to determine the effectiveness of high style vending facilities in service stations.

One unit, located in the center of a busy shopping area, is actually part of the station building, while the others are independent structures located at various places in close relation to pump areas and sales rooms. The modern structures feature clean, crisp lines, with white venders set into a blue background. Each has an angled roof overhang of aluminum to protect the equipment and offer shelter to customers.

The term "area treatment" has been originated by Vendo to describe the new high style installations. The company has been the leader in promoting and developing this type facility. Vendo has furnished over 200 area treatment layouts for specific locations. These layouts include blueprints of equipment layout and dining area, construction details for housings and special built-in units, and artist's color sketch of the entire area, complete with decorative scheme and suggestions for furniture, lighting fixtures and draperies, all in keeping with a central motif. The service is available to both vending specialists and locations which wish to integrate automatic equipment into specific areas.

Johannes Backes, Vendo location designer, has created installations for a great variety of places from coast to coast.

The Vendo cafeteria is a showplace for the industry, combining fully automated service with beauty of decor, using walls of paneled walnut, bright modern print draperies and a housing for the vending equipment of textured vinyl in pastel shades. Vendo's subsidiary, Vendorlator Mfg. Co., Fresno, Calif., also has a specially designed automatic cafeteria whose principal decorative feature is a mural depicting activities of Joaquin Murietta, famed outlaw of early California history.

At-work locations, institutions and schools are some of the other places where area treatment installations are found. KW-Dart Truck Co. included a vending room in the construction plans of its million dollar headquarters building in Kansas City. At this location, the venders are angled along one wall, to give an impression of greater width to the room, and a mural above the automatic equipment uses artwork to illustrate company products throughout the years.

### Unit saves $500 month

Methodist Hospital, largest medical facility in the state of Indiana, recently installed a "Coin Cafe" to replace an 8 am-8 pm soda fountain. The housing for the equipment cost $2,800, and all venders are furnished, serviced and maintained by Howard Vending Co. The unit used light colors and plastic materials to create a modern effect. Current savings are reported to be around $500 a month over the cost of the subsidized soda fountain operation.

The University of Kansas has nine area treatment vending installations, the latest being a facility with Polynesian decor designed for a 420-capacity men's dormitory. University officials say vending is the "only answer" to adequate campus food service, and use the coin-operated equipment to supply food in a "perimeter area" of outlying dormitories and classroom buildings. After studying this operation for a month, administrators at the University of Wichita decided to install five area treatment facilities on their own campus immediately, and to put in nine additional units within the year.

### Vending in famous places

The subscription department of *Look* magazine, which recently moved into a new 5-story building a block long and a half block wide in Des Moines, Ia., has an automatic facility for its 950 employees. Management studied the problem of on-premise food service before moving into the new building, and chose vending in preference to a manual cafeteria.

Other locations are turning to vending. Well known places include the

*to page V-21* →

*A busy highway station in the Charlotte, N. C. area is the site of a custom-designed vending installation housed in a special structure of modern, clean lines. It is one of five being operated in a test program conducted by Esso Standard, Div. of Humble Oil & Refining Co., and The Vendo Co.*

# Versatile coin changer simplifies automatic merchandising

*300V Maximum Security Multi-Changer.*

**Standard Multi-Changer offers three units in one cabinet to suit customers' needs**

THE GROWING ACCEPTANCE of change-making machines has generally paralleled the increasing popularity of automatic merchandising.

Both in the fields of automatic vending and coin-operated services (parking meters, coin-operated laundries, etc.) the availability of the necessary change adds substantially to the potential business volume.

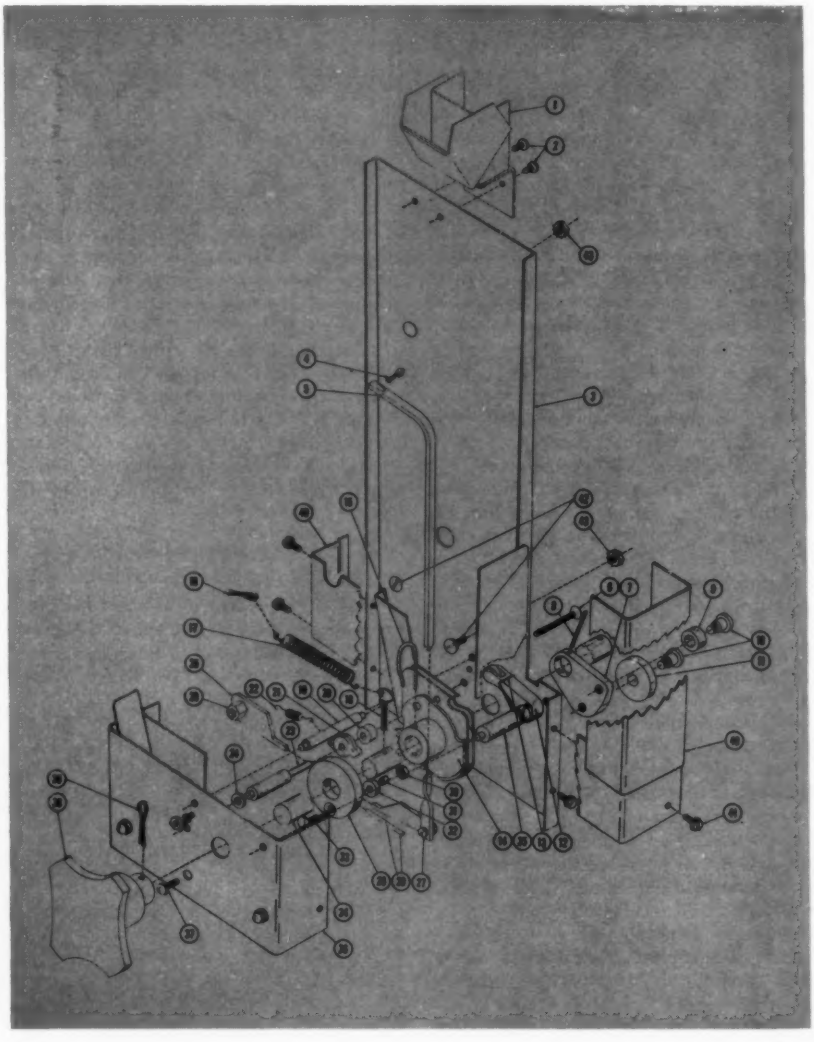
One of the top producers in the relatively new but fast-expanding coin-changing equipment industry is Standard Change-Makers, Inc., Indianapolis, Ind. The firm specializes in the production of manual coin-changing equipment, but their product line also includes electric coin changers and coin sorting and counting equipment.

Standard Change-Makers manufactures a full line of individual units for changing 5¢, 10¢, 25¢, or 50¢ coins. Feeling the need for a larger, more versatile unit, the company recently introduced the 300 Series Multi-Changer, a manually-operated machine consisting of three coin changers enclosed in one cabinet.

A customer ordering a Multi-Changer has a choice of 364 possible combinations of coin changing units to make up the trio of units in his machine. Equipment is available for changing 5¢, 10¢, 25¢, and 50¢ coins. However, the matter is complicated by the fact that the firm offers seven models of 50¢ coin changers, each returning a different combination of change, and four models of 25¢ coin changers, in addition to changers for dimes, nickels and foreign coins.

To illustrate the versatility of the equipment, two 50¢ coin changers can be incorporated in the same cabinet — one changer can dispense a quarter, two dimes and a nickel, while another unit

*to Page V-26* →



## COIN DISPENSING UNIT

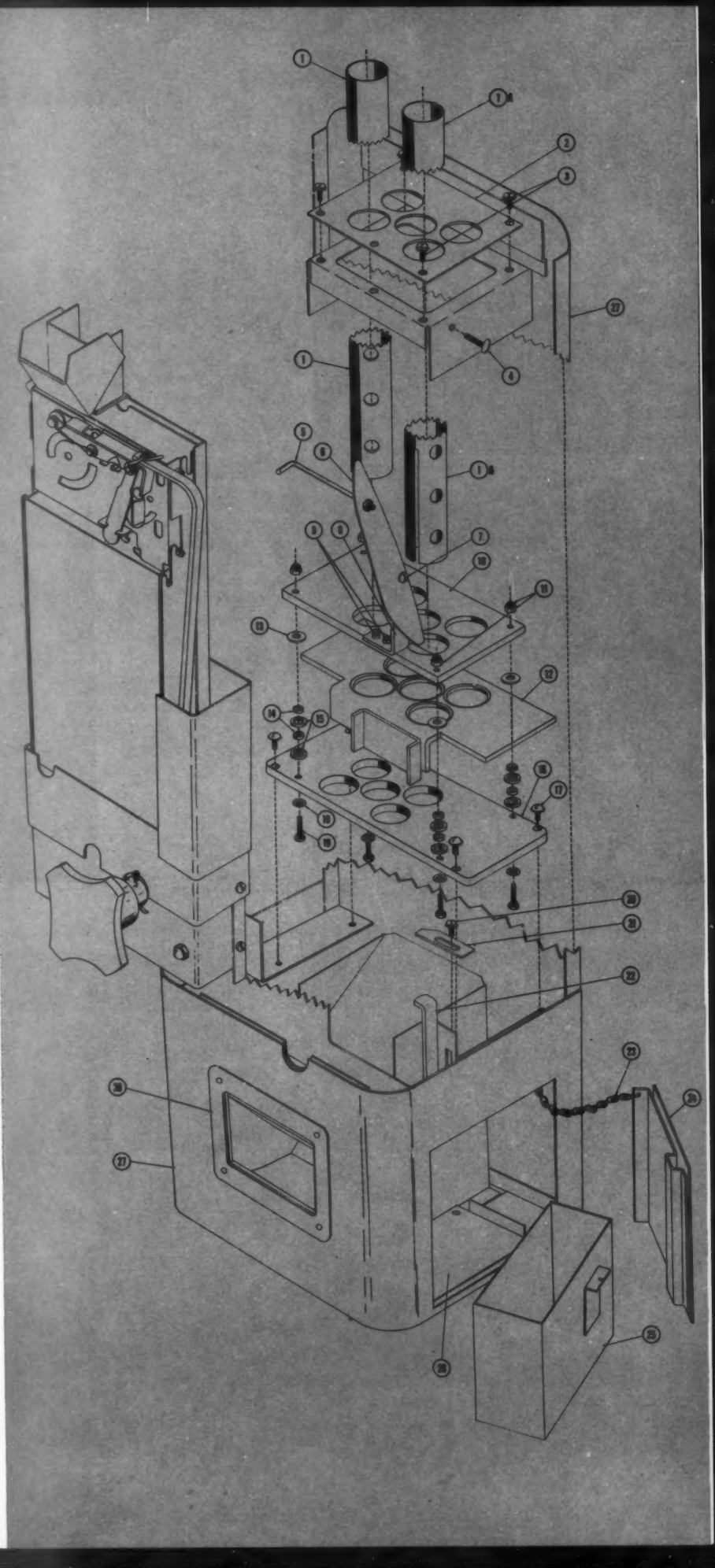
### (Right)

1 Coin Tube (1-Cent)
1A Coin Control Tube (1-Cent)
2 Top Tube Guide Plate (Model 500)
3 Guide Plate Screws (4 Set), #8-32 x ¼"
4 Thumb Screw, #8-32 x ¾"
5 Sold Out Lever Pin
6 Sold Out Lever
7 Sold Out Lever Pivot Screw, #6-32 x ¼"
8 Sold Out Lever Bracket
9 Bracket Mtg. Screw (2 Set) #8-32 x ¼"
10 Chassis Tube Guide Plate (Model 500)
11 Lock Nut (4 Set) #8-32
12 Slide Plate (Model 500)
13 Spacer Shim (.005")
14 Steel Roller (.065")
15 Nylon Roller (.050")
16 Chassis Plate (Model 500)
17 Chassis Plate Mtg. Screw (4 Set) #8-32 x ⅜"
18 Int. Tooth Lockwasher (4 Set) #8
19 Hex. Head Screw (4 Set) #8-32 x ¾"
20 Detent Screws (2 Set) #8-32 x ¼"
21 Detent
22 Cash Door Locking Bar
23 Cash Door Retainer Chain
24 Cash Door
25 Cash Box
26 Frame Set (With Screws)
27 Bottom Cabinet
28 Drill Prevention Kit (Includes Ref. No. 40)

## ACTUATOR

### (Left)

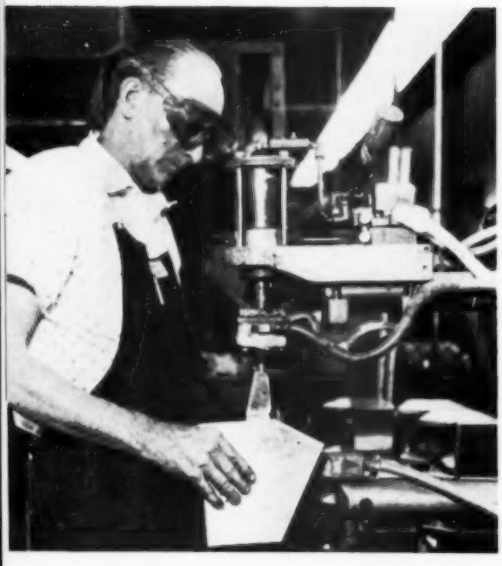
1 Top Coin Chute
2 Coin Chute Mtg. Screws (2 Set) #8-32 x ⅛"
3 Actuator Works Plate
4 Cotter Pin
5 Rejector Pull Rod
6 Clamping Screw, #6-32 x 1⅞" (Includes Nut & Lockwasher)
7 Actuator Cam Assembly (Includes Ref. No's. 9, 10, & 11)
8 Roll Pin
9 Small Cam Roller
10 Special Roller Mtg. Screw
11 Large Cam Roller
12 Coin Pawl
13 Coin Pawl Spring
14 Coin Pocket Assembly
15 Coin Pocket Clip
16 Cotter Pin
17 Handle Return Spring
18 Return Spring Thumb Screw
19 Coin Pocket Stop Pin
20 Ratchet Post Collar
21 Ratchet Dog
22 Ratchet Spring
23 Ratchet Post
24 Ratchet Post Spacer Washer
25 Rejector Pull Rod Cam
26 Pull Rod Cam Pivot Nut
27 Cam Hub Screw
28 Actuator Cam Assembly (Includes Ref. No's. 30, 31, 32, & 33)
29 Roll Pin
30 Hex Nut, #8-32
31 Cam Roller Spacer
32 Cam Roller
33 Flat Hd. Screw, #8-32 x ½"
34 Coin Unit Shaft
35 Coin Pawl Post
36 Actuator Works Strap
37 Cam Mtg. Screw
38 Handle
39 Handle Clip
40 Drill Prevention Kit (Includes Ref. No. 28)
41 Actuator Works Assembly Screw, #6-32 x ¼"
42 Actuator Mtg. Screw, #12-24 x 5/16"
43 Actuator Mtg. Nut, #12-24



# Rudd-Melikian brews good ne

## company in full production on B

**1** *(Left) — Selector panel electrical contacts are soldered in sub-assembly area located adjacent to production lines.*



**2** *(Left) — Spot welding is done on Brew-A-Cup's stainless steel cup chute.*

**3** *(Below)—Mechanical sub-assembly of small parts of the Brew-A-Cup is done in work area next to the production lines.*

NEAR SUBURBAN HATBORO, PA., in picturesque Bucks County about ten miles north of Philadelphia, good news is brewing for coffee lovers.

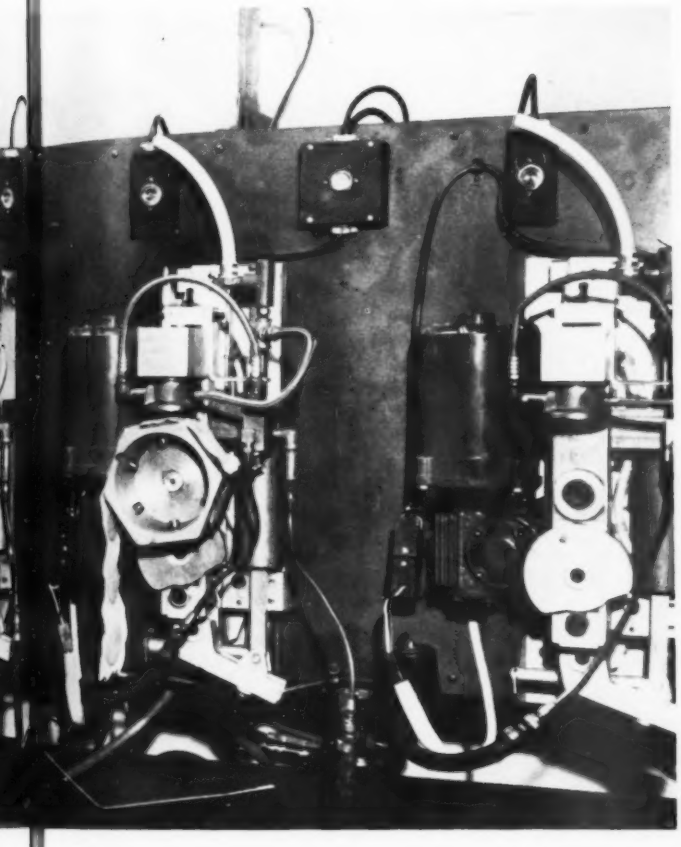
A recently-introduced machine, called Brew-A-Cup,* is now in mass production at the sprawling plant of Rudd-Melikian, Inc. The machine serves cups of hot coffee, each individually brewed in six seconds.

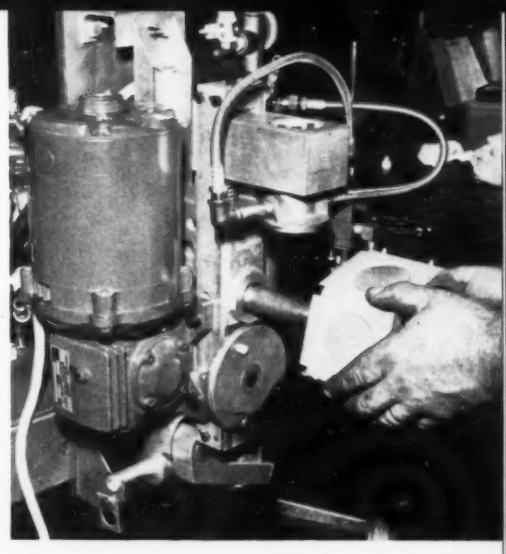
Secret of the unit is in two developments: an automatic conveyor belt containing water-penetrable packets, each containing enough ground coffee for one serving, and a high-speed brewing chamber. When a coin is deposited, an individual packet is locked in the chamber. Hot water is forced through the packet, perking fresh coffee into the waiting cup below.

**MPM carried a design story on the Brew-A-Cup on page 13 of the special automatic merchandising section in the May, 1959 issue.*

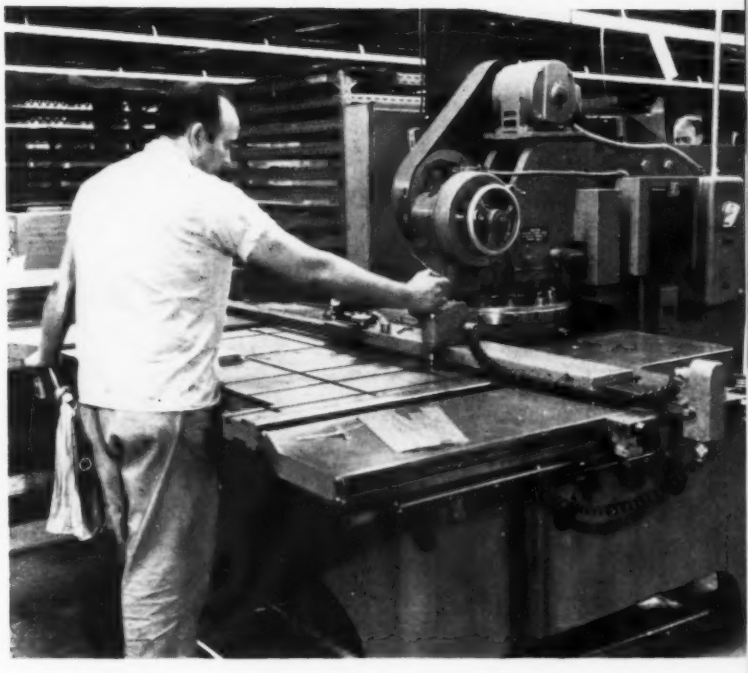
# d news for coffee lovers

## on Brew-A-Cup coffee maker





**4** *(Right) — Brewer hex is assembled prior to being placed in machine. This unit is one of the developments that makes it possible for the machine to serve an individually brewed cup of coffee in only six seconds.*



In addition, the machine also serves hot chocolate, tea and soup.

The Brew-A-Cup is manufactured in the two-story R-M plant. Factory space occupies 60,000 sq. ft., which includes a recent $2,500,000 addition of 27,000 sq. ft. The firm employs 700 people.

The machine is produced on two lines, each about 200 feet long. Production is now moving at the rate of about 30 machines per day. Over $10 million worth of Brew-A-Cups are planned for this year. However, demand for the machines is said to be increasing at such a rate that it is anticipated output will have to be stepped up to meet the need.

The unit is 70 inches high, 35 inches wide, and 25½ inches deep. It has a capacity of 450 seven-ounce hot cups, and weighs 650 pounds.

Most of the machine's metal parts are made under contract by independent fabricators. Among these parts are the metal cabinet, cannisters, cup dispensers, coin changers and rejectors, switches, evaporators, motors and heaters. However, the plant is equipped with such machinery as a turret punch

*to Page V-20* →

**5** *(Above, right) — Metal stamping of small parts is done on this turret punch press.*

**6** *(Above, left) — Testing the brewing units prior to installing in machines is but one of the many tests and inspections made of the machines prior to delivery to customers.*

**7** *(Right) — Overflow switch is installed. Switch prevents water from entering unit when waste pail is full.*

*The customer picks the exact item she wants in the Rowe All Purpose Merchandiser. The machine dispenses 130 food and drink items, including sandwiches, salads, pies, cold desserts, fresh fruit, fruit juices, carbonated drinks and milk.*

13 to a column) are visible at all times; to bring the other 78 into view the customer merely touches a transport button, which revolves the shelves on a chain belt. As soon as the item desired appears behind one of the 13 glass delivery windows, the coins required for that item may be inserted, and the sliding delivery windows can be opened.

The unique "carousel" arangement of shelves allows for a more compact machine than had been possible previously for such a wide variety of products. The unit measures 40 inches wide, 22½ inches deep and 72 inches high.

The shelf transport mechanism can be automatically activated each 30 minutes to bring the compartments filled with certain perishable foods in front of the delivery windows. This helps increase the sales of these foods by making them available more frequently.

Compartments are quickly accessible for cleaning by lifting out an entire vertical column of 13 compartments.

# Every item displayed in All Purpose Merchandiser

## Rowe vending machine has capacity for 130 food and drink items

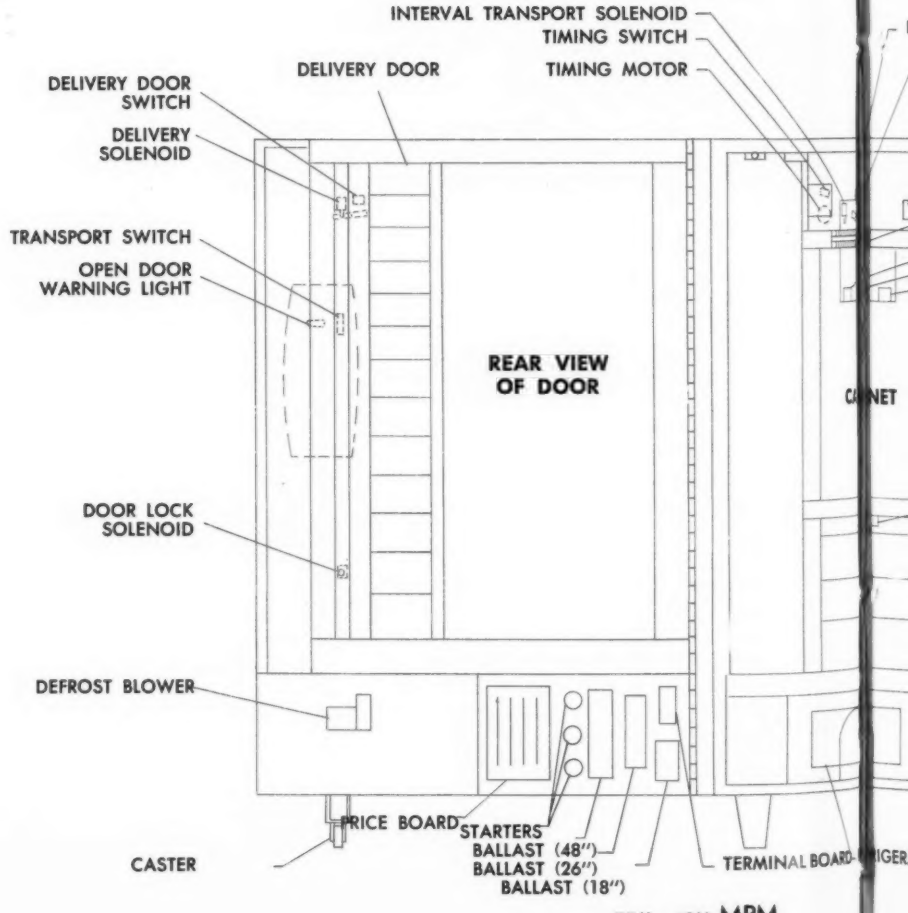
A NEW AUTOMATIC VENDING MACHINE that displays 130 separate food and drink items and delivers the identical item the customer selects has been introduced by Rowe Mfg. Co., Whippany, N. J.

The Rowe All Purpose Merchandiser is an electrically-operated vendor of refrigerated sandwiches, salads, fruits, packaged desserts and other foods, in solid, liquid or semi-liquid form.

The machine has selectivity of products limited only by price range, size of product and location of product in the machine.

Vending at any four prices, and in any combination of coins totaling five to 50 cents (a quarter is the largest coin acceptable), the unit is capable of dispensing a complete light lunch. It has also been designed to fit into the company's Roweboteria ensemble of matching units, which form a complete automatic cafeteria.

Behind the vendor's large insulated glass "showcase" front, 52 of the 130 compartments (in four vertical columns,

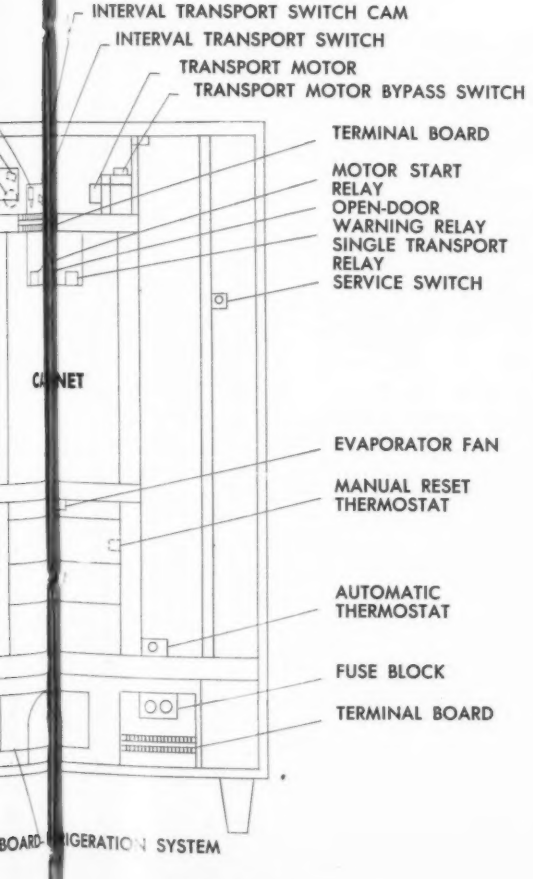


Another unique feature of the unit is a forced air vent system that keeps frost from forming on the glass delivery windows. Heated air from the compressor compartment is blown through a series of vent slots in the unit's frame next to the glass delivery windows. This air is blown on the outside of the windows, keeping condensation from forming on the cold glass because of contact with warm, moist air during the summer or in overheated locations.

The All Purpose Merchandiser consists of four major assemblies: cabinet assembly, coin mechanism, operating unit and refrigeration system.

### Cabinet assembly

The cabinet assembly consists of a hinged front door and cabinet which houses the operating unit and the refrigeration system. The hinged front door contains the open door warning light, coin entrance, coin return handle, transfer switches, delivery doors and switches, delivery door solenoids and latch, thermopane window, fluorescent lamps and circuit elements, price board, blower assembly and a caster.




The insulated compartment in the cabinet assembly contains the operating unit, the evaporator of the refrigeration system, the manual reset thermostat, the control thermostat, interlock switch, and a thermometer. Mounted to the right outside wall of the insulated compartment are the service switch and the coin mechanism.

### Coin mechanism

The coin mechanism includes a coin frame that contains a slug rejector which passes proper coins to the totalizer and rejects improper coins or slugs; a totalizer which determines the correct number, denomination and combination of coins required for each purchase; and a coin chute which directs coins to the cash box, or to the coin return bucket. The coin mechanism is mounted to brackets on the side of the operating unit and is fastened in place by a register lock. The mechanism from the factory is preset for operation at four prices, but can be modified quickly to operate at other prices by changing the wiring to the circuit board. Wiring is of the quick-disconnect type to permit easy and rapid changing of prices on location without the use of tools.

### Operating unit

The operating unit includes the columns of compartments used for vending, the transport motor for driving the columns, the upper and lower chains, transport motor bypass switch, interval transport device, frame assemblies, relays and terminal board.

### Refrigeration system

The refrigeration system includes a compressor, a condensor, an evaporator, two fans, a control thermostat and a manual reset thermostat. The compressor, the condensor and a condensor fan are mounted below the insulated compartment, and the evaporator is mounted on the insulated compartment. Also mounted in the insulated compartment are the manual reset thermostat, the automatic thermostat and the thermometer. Included in the refrigeration system is the evaporator fan mounted above the evaporator.

### Operating components

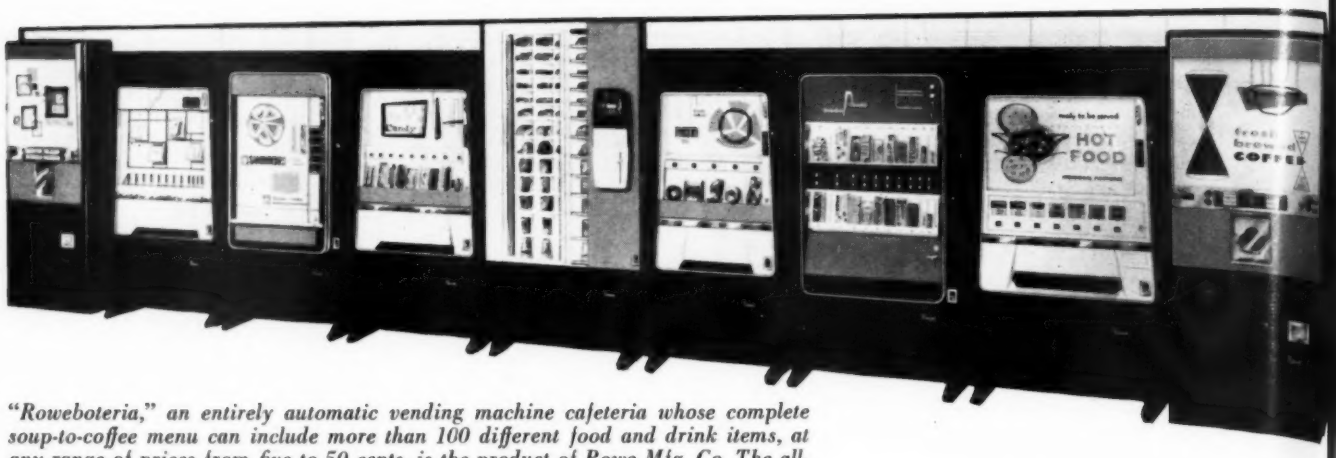
Among the major components in the vending unit are a manual reset thermostat which closes vending circuits, fluorescent lights circuit, timing motor circuit, and the defrost fan circuit when the temperature is below 50°F. An automatic thermostat regulates the "on-off" cycle of the compressor in the refrigeration system to control the temperature in the machine.

*Internal view of unit shows design features that allow swift and easy servicing. Front door swings open to permit serviceman to reach any part of machine. A special service switch automatically rotates compartments, permitting direct-view filling.*

When the front door is opened, a door interlock switch operates to break circuits to the evaporator fan, timing switch, interval transport solenoid, door lock solenoid and transport motor. An open door warning relay, which is normally energized, closes circuits to the coin mechanism. In de-energized position, it breaks the circuit to the coin mechanism and closes the circuit to the open door warning light. A transport motor is used to rotate the containers and motor cam which operates the transport motor bypass switch.

A service switch permits manual control of the transport motor for servicing the machine. One of the most important items, the interval transport mechanism, consists of a timing motor, timing switch and switch cam. It serves the function of indexing perishable food compartments to the front of the machine every 30 minutes.

In the coin mechanism, the major components are an unlatch solenoid, motor switch, reset motor, coin return switch, and motor bypass switch.



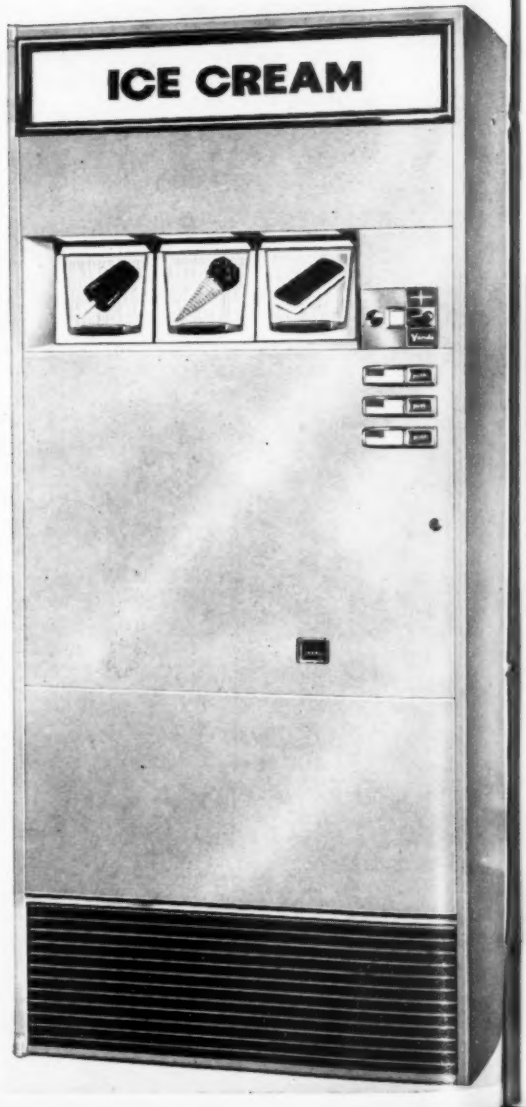

*"Roweboteria," an entirely automatic vending machine cafeteria whose complete soup-to-coffee menu can include more than 100 different food and drink items, at any range of prices from five to 50 cents, is the product of Rowe Mfg. Co. The all-purpose merchandiser (center) holds as many as 130 separate packaged foods and drinks of varying shapes and sizes, ranging from milk cartons and canned beverages to sandwiches, salads, fruits, and cold desserts.*

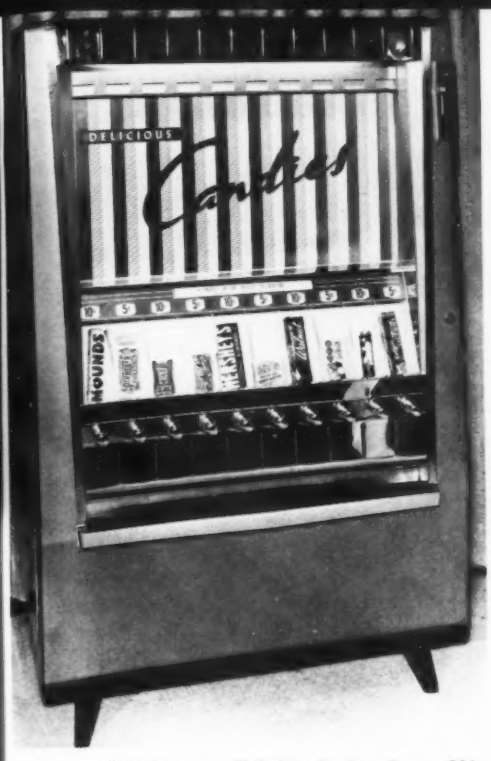
# Automatic merchandisers for the "Soaring Sixties"

**. . . everything from soup to nuts, including change**

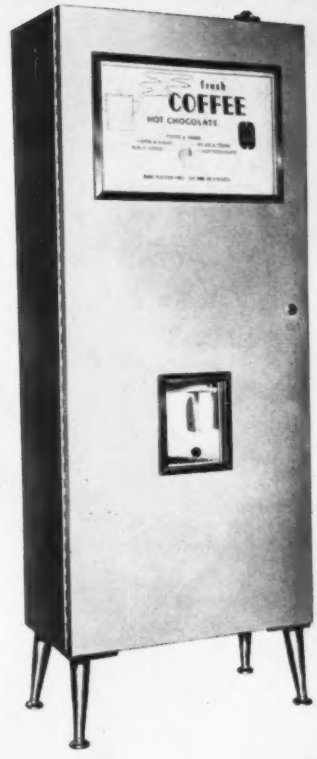
*(Left) — Sodashoppe by Apco, Inc. vends four carbonated and two non-carbonated drinks. It has a 1,400-cup capacity and a 2,630-drink syrup capacity. Ice Maker dispenses crushed ice in every drink.*

*(Right) — Ice Cream Merchant by The Vendo Co. has a capacity of 105 to 210 items with three varied selections. Featured are lighted product display, pushbutton operation-post-select mechanism, and electric changer, which returns correct change automatically.*






*(Left) — CC-DeLuxe by National Vendors, Inc., vends candy, cookies, crackers. The unit has a capacity of 200-240 items, with storage compartment in base. Features include slug rejector and changemaker.*



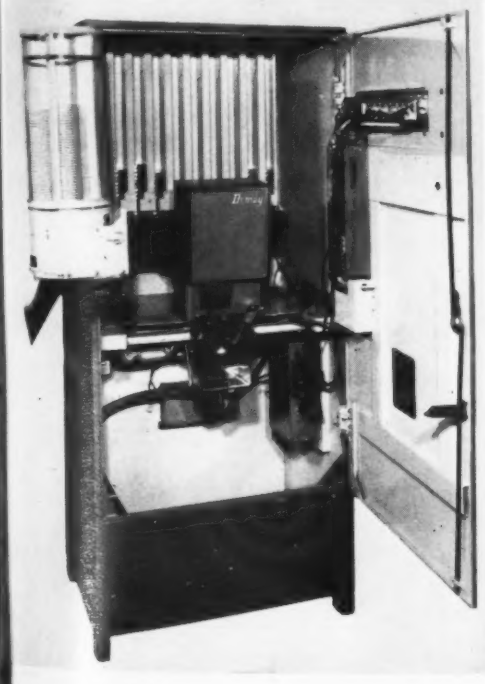

*(Right) — DeLuxe Hot Food Vendor by The Fred Hebel Corp. vends hot coffee four ways, and dispenses hot chocolate with cream and sugar. Entire front opens for efficient servicing. Ingredient capacity is 275 cups of coffee, 90 cups of chocolate, and a cup capacity of 250.*

**more photos on succeeding pages**

*(Right) — U-Select-It by Coan Mfg. Co. is completely selective, utilizing a conveyor to obtain candy or cigarettes. The unit has a capacity of 74 items, and can be wall or floor mounted.*

*(Below) — "Piggy Back" feature of the multi-purpose food merchandiser by Wittenborg, Inc., doubles the full-meal platter capacity. A second platter slides into place automatically after the first has been removed from compartment.*

*(Below) — HB500 by Demay, Inc. is a hot beverage vending machine that automatically makes a fresh cup of hot coffee, one cup at a time, from freshly ground coffee beans packed in individual containers.*



*(Left) — Coffee dispenser by HAVA JAVA Distributing Corp. features visible brewing operation which vends coffee in 12 seconds. Standard coffee hopper has capacity of 10 lbs., a yield of 500 cups. Pushbutton control permits dispensing of hot water for tea, hot chocolate, or soups. Turn of an electric key switch and it's "coffee break" — free coffee.*

*(Right) — Dollar bill changer by A.B.T. Division of Atwood Vacuum Machine Co. adapts easily to particular change requirements. Returns change within 4 seconds after valid bill is inserted. Rejects foreign and counterfeit money.*

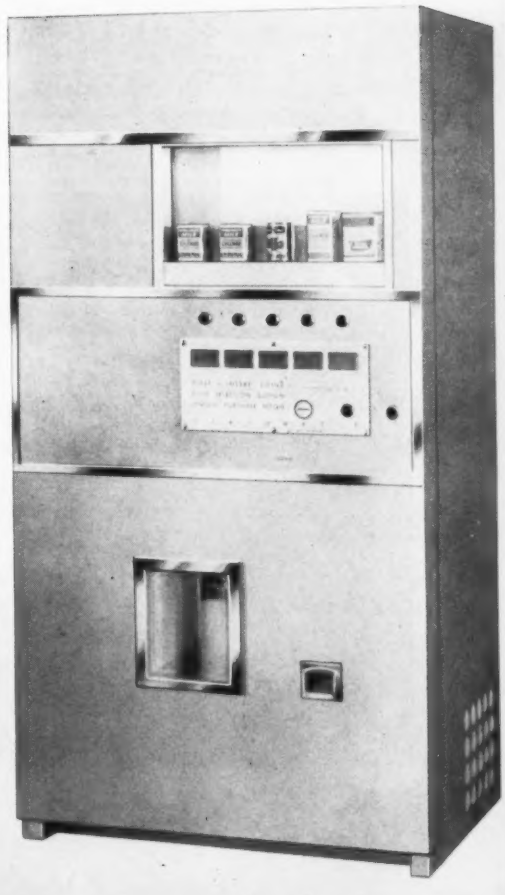
*(Left) — "Brew-A-Cup," a new coffee machine that brews and serves individual cups of coffee directly from ground coffee, is a product of Rudd-Melikian, Inc. The unit provides consistent, freshly brewed coffee with full flavor and aroma by packaging enough coffee for an individual serving in a paper-like water penetrable packet. A series of the packets are connected to each other on a specially developed tape. When a coin is inserted, hot water is forced through one of the packets, brewing the coffee into a waiting cup in six seconds.*

*(Right) — The Model 660 cup-at-a-time fresh-brew coffee vender by Bally Vending Corp. dispenses with all dry ingredients; dry cream, granulated sugar, and roasted, ground coffee. The unit also vends chocolate.*

*(Left) — Automatic popcorn vender by Gold Medal Products Co. has capacity for 100 sales, with storage below for 175 sales. Uses prepopped corn. Multiple locks available for 25-unit routes.*

*(Right) — Perk-ette coffee dispenser by Perk-ette, Inc., dispenses fresh percolated coffee and turns itself on at a given hour each morning, turning itself off at a given hour each evening, or it may be operated on a 24-hour basis. The unit is equipped with a refrigerator compartment for customers who can help themselves to cream directly from the dairy carton.*

*(Left) — "Sweet Center" by Lehigh, Inc. features 10 columns, and vends from 400 to 450 bars depending on thickness of product. The unit utilizes the first in, first out principle, and the gravity magazine permits use of complete column height.*



*(Right) — Dariomatic Model 610 by United States Chemical Milling Corp. serves cartoned or canned products, milk, food, or juice. The unit vends five products, four different prices, and makes change automatically. It features anti-theft mechanism, large refrigerated backup stock area, and product display window.*

**8** *Insulating evaporator with a closed cell, non-hydroscopic material that has a high K factor. The evaporator is placed in liner which is pre-heated to 140 to 160 degrees. The insulator, consisting of a resin, catalyst and esotrone, is poured between liner and evaporator.*

→ *from Page V-13*

press, a 45-ton punch press, and a power brake for producing some of the smaller and less complicated parts.

Production activities are under the supervision of R-M Vice President George Schollhamer and his staff. For maximum efficiency and economy, related manufacturing departments are situated adjacent to each other on one floor to assure expeditious flow of component parts from receiving to stock to sub assembly and assembly areas. As in all production line operations, the matter of logisitics is important in achieving profitable operations.

In addition to the two Brew-A-Cup production lines, there are two other production lines which turn out different models of coffee machines (which are still in demand by operators), and R-M's full line of modular equipment. Included in this line are automatic machines that serve hot foods, milk, sandwiches, and cold buffet. The same stockroom and sub assembly areas serve these production lines.

**9** *Insulation foams up to completely encase evaporator. It solidifies within four hours, forming an efficient insulation cover.*

## Automatic vending

→ *from Page V-6*

Our operators, or "automatic vending specialists," have both the youth and experience needed to achieve success in the "Sixties."

They are constantly searching for new products to sell and for new types of vending machines from which to retail their products. In this regard, it is now quite obvious that improvement in packaging is one of vending's greatest problems. The packaging and container industries are striving to help us. They have awakened to the size and scope of our industry and are finding, as did the paper cup and metal products industries, that we can become one of their prime markets.

Any manufacturer of items made for retail sale will do well to investigate the automatic vending industry before deciding on a product size, shape or package.

In the "Sixties," our banking institutions will finally take the time to investigate and come to understand that our industry is a natural for their help and that it has as fine a collection history as any industry in America.

Automatic vending is now recognized as a successful industry by insurance companies, stockbrokers and investment bankers. This has come about because of our present size and also because of the mergers in all segments of our industry during the past few years.

The financial community is now, and will continue to be, indispensable to our industry in the "Sixties."

People will be on the move in the "Sixties." That means "impulse buying" will play an even greater part in retailing. People will move about more because they will have the time, the transportation and the money. The future growth of our industry will bring us to the complete realization that we will not be able to "go it alone." We will need our trade group — National Automatic Merchandising Association—more than ever. Manufacturers, suppliers and operators have within the framework of NAMA the vehicle with which to protect the growth of our young and vibrant industry. We intend to continue to maintain a strong national association since, in the last analysis, a strong NAMA means a strong industry.

Our fundamental pioneering has been done well. We know where we want to go and how to get there. An attitude of complacency will leave the proponent lost in the backwash of our surging industry.

## Unified fronts

→ *from Page V-9*

Statue of Liberty. The National Park Service has recently approved plans for an automatic vending facility in the concession stand at the base of the famous statue, where 180,000 visitors a year are overtaxing manual food service.

At Disneyland, vending facilities will be expanded and every installation will be designed to complement the "fun theme" of the big park. Designs which have been submitted include automatic venders camouflaged to resemble control panels of futuristic space ships, and plans are being made for vended foods of distinctive appearance, packaged in unique containers.

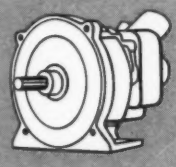
Certain construction details are common to all area treatment installations. In a custom housing, for instance, minimum lineal space for each piece of equipment is 42 inches, and venders with thermal controls for hot or cold foods or beverages must have at least 12 inches of space at the rear for air circulation. Models without thermal controls, such as venders for candy, pastry and cigarettes, may be placed flush against the wall. In addition to the equipment, complete meal facilities require service counters, which are usually built into the installation. These counters may be various widths, a convenience for fitting batteries of equipment into a given wall space, but they must be large enough to accommodate flatware, napkins, condiments, trays, and such things as a warming oven for sandwiches or a can opener, if a hot canned food vender is included in the installations. Built-in waste receptacles are also necessary, and are usually located at several points in the installation, a big improvement over the unsightly containers which were formerly placed in front of the equipment.

Floor-to-ceiling installations may be achieved by installing horizontal panels above the equipment and utilizing the space for distinctive artwork.

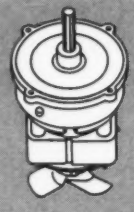
It is even possible to incorporate such ungainly architectural features as construction posts or air ducts into an installation by screening them with panels or grillwork which extend the decorative motif or match the panels covering the fronts of the automatic venders. The flexible nature of vending installations makes it possible to adapt the coin-operated equipment to virtually any purpose or any location, limited only by the imagination and desires of the people who will use it.

## New Office Announced

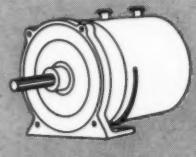
The Misamore-Davis Co., manufacturers representatives specializing in the sale of metal, rubber and plastic component parts to original equipment manufacturers, have announced the installation of a Cincinnati office.

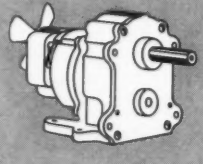
Standard model with base for horizontal, vertical or angular mounting.



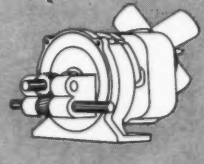
Standard model without base for face mounting.



Standard model with motor cover; ventilated or non-ventilated.



This model provides up to 300 lb. in., starting torque, small enough to fit the hand.



Right angle shaft, single or double extension at 3, 6, 9 or 12 o'clock.

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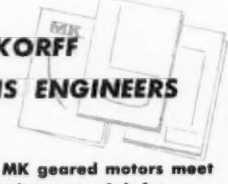

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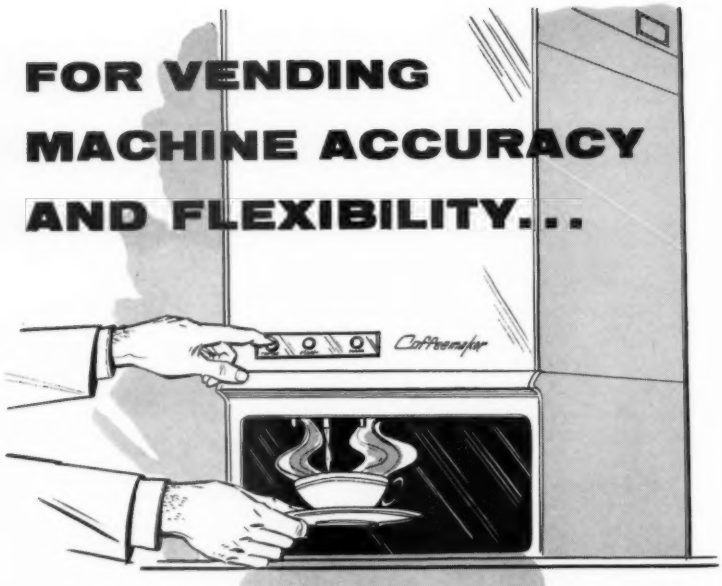
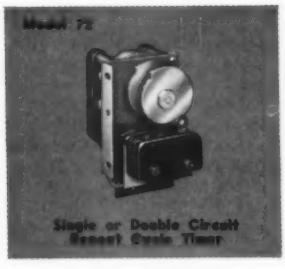
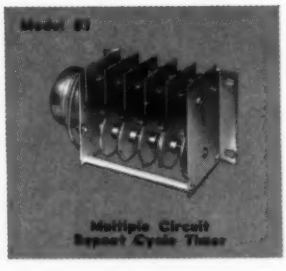
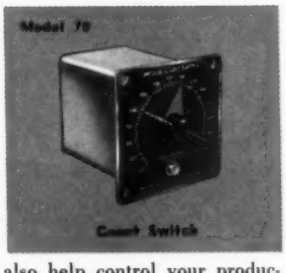
# FOR VENDING MACHINE ACCURACY AND FLEXIBILITY...



## new, low cost HAGEN cycle timers and count switches




These new HAGEN time and count devices make possible continuous program control over a wide range of cycles as required in the operation of your vending machines. Powered by "time-tested" HAGEN synchronous motors, these devices can be supplied to operate in hundreds of standard combinations or they can be custom-designed to your specifications. HAGEN dispensing controls can also help control your production costs. Initial cost is low . . . helping you maintain a competitive price on your equipment. And the superior construction of HAGEN controls means less maintenance, far fewer field returns.

Write for FREE bulletins on HAGEN time and count devices . . . the low cost, high quality controls for vending machines and commercial appliances such as dishwashers, water softeners and dry cleaning equipment. Address Dept. MPM-760.

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Of The Gamewell Company
AN E. W. BLISS COMPANY SUBSIDIARY


## *M. B. Rapp*

EXECUTIVE VICE PRESIDENT & DIRECTOR OF SALES, APCO, INC.

### Hot food service a reality

**ONE OF THE SAFEST predictions that business forecasters can make is continued growth for the vending industry. Even with its dramatic advances of the past few years — the introduction of automatic dispensing of brewed coffee, and soda with crushed ice — vending is still just beginning to realize its potential.**

**This climb will be greatly accelerated by the emergence of hot food vending from the research and testing stage into full-scale production and nationwide acceptance. As a matter of fact, the growth of hot food vending may well surpass anything our dynamic industry has ever known.**

**Plants will turn to more and more automatic dispensing equipment, until they achieve complete automation. They have every reason in the world to follow the trend toward complete automatic food service, now that hot food service is a practical reality. It saves them time, money and space. Their employees are quickly won over to the cleaner, faster service, as well as to the steadily increasing variety of hot dishes available to them.**

## *Jack B. Low*

PRESIDENT, WITTENBORG, INC.

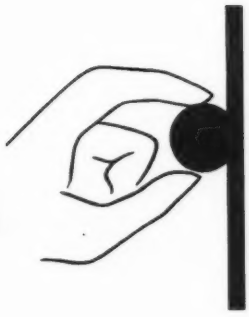
### Opening new markets

**AUTOMATIC MERCHANDISING has amply proved its ability to handle mass feeding on a twenty-four hour basis. Delicious meals similar to those served on airlines are prepared daily in commissaries and served automatically.**

**The next market for vending machines will be for grocery and retail stores, possibly even setting up banks of machines in apartment houses to supplement purchases from stores.**

AN EXCLUSIVE MPM FEATURE

# FUTURE OF AUTOMATIC MERCHANDISING



## Charles H. Brinkmann

PRESIDENT, ROWE — AMI SALES COMPANY

### Automatic vending now an essential service

**THERE CAN BE LITTLE DOUBT that the big future of the vending industry is in automatic feeding — in factories, offices, transportation terminals, highway restaurants, etc. For it is here that vending comes into its own as an essential service, rather than continuing in its historical role as primarily an "impulse" sales technique. Last year, "machine-fed" Americans for the first time spent more than $1 billion in coins for food and hot and cold beverages (out of total vending sales of $2.3 billion). The era when the industry was based almost entirely on "impulse" sales of cigarettes, candy and soft drinks is gone. We have now entered a new era where our electromechanical technology permits us to build machines capable of serving a wide variety of food and beverage items in a manner so economical that factories of virtually any size can now enjoy the benefits of in-plant food service. New equipment which will give even broader scope is now in development, and there is little question that the automatic cafeteria — either by itself, or in conjunction with conventional feeding service, will play an increasingly more important role on the American industrial scene.**

**With the advances made with closed circuit television, it is possible that a two-way communication might be set up in connection with vending installations and a central office to insure the customer personal service even if it is automatic. Probably a currency handling unit could be used in conjunction with this.**

**Coin and currency handling equipment along with the machines themselves are rapidly being adapted to meet the ever-increasing need for automatic sales machines which allow greater sales at lower costs.**

## W. J. Manning

VICE PRESIDENT-MARKETING, RUDD-MELIKIAN, INC.

### Compact growth

**WALL STREET'S SUDDEN recognition of the automatic merchandising industry . . . . tagging the public-owned corporations with the magic phrase "growth stocks".... portends the future of the entire industry. Sales reached a record $2.3 billion in 1959. During the soaring sixties, the growth pattern will accelerate to the extent that by 1970 the industry potential should reach a new peak of $6.6 billion.**

**Several factors will bring this about.**

**1. Increased population of nearly 29,000,000 people, brought about mainly by record births and a longer life span.**

**2. Increased working force of nearly 14,000,000 new workers.**

**3. Increased leisure hours coupled with a shorter work week.**

**4. Increased acceptance and use of the products and services of the automatic merchandising industry.**

**These growth factors are a challenge that will create an unprecedented demand on our industry. In addition to having to increase the numbers of our employees, improve and expand manufacturing facilities, employ more aggressive marketing policies and techniques, and develop more dynamic leadership, we need also to develop even more creative new equipment that will meet the needs of this growing country of ours.**

**They call this the space age. As we get deeper into the 60's, we will learn that business management and people in general will become more and more concerned about the lack of space, and will seek ways of gaining working space. One way is to reduce the size of equipment, including automatic merchandising machines. Then, too, there will be need for smaller units to serve locations where there are few people.**

**The creative design of compact equipment during the next decade will help solve this problem. New materials coming from the research and development laboratories, such as those in the imaginative petrochemical industry, may play a role in the development of compact automatic merchandisers. Regardless, these compact models must serve people what they want, when they want it, where they want it, efficiently and economically at a price they can afford. Compactness will come about through creative development.**

**Growth for the industry in the next decade may be somewhat phenominal. Nonetheless, it will be on a sound business basis for it will be based on filling the needs of people.**

## Robert W. Wagstaff

VICE CHAIRMAN AND EXECUTIVE VICE PRESIDENT, THE VENDO CO.

### New concept of vending

**CLUES TO FUTURE GROWTH and diversification of automatic merchandising are found in two recent developments within the industry. The perfection of equipment to serve all manner of hot and cold food has made the automatic cafeteria practicable, and the creation of distinctive high style installations shows its universal application.**

**Evidences are all about us of the**

*to Page V-24* →

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- **Compact,** built rugged for severe duty
- **Simple design,** quality materials and fabrication
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new concept of vending which makes automated meals a basic requirement of modern everyday life. A large publishing firm chooses vending over manual service. A leading insurance company requests an artist's sketch of a vending installation for a handsome new building in New York. A major oil interest tests the effectiveness of specially-designed installations at its service stations. A midwestern university installs five custom designed facilities and will put in nine additional units within the year.

While volume sales prove vending is growing by leaps and bounds, it is these individual developments which reveal how the industry is broadening its base and expanding its services to a public which demands not only fast, efficient food service, but the finest in styling and atmosphere in dining facilities.

*Harold D. Baum*

*PRESIDENT, MECHANICAL SERVANTS, INC.*

### Vending has not "scratched the surface"

**AUTOMATIC MERCHANDISING** has not "scratched the surface" of its potential growth. The phenomenal success it has enjoyed in the past has been due, to a great extent, to the need for industrial plants and certain public locations to provide food, refreshments and a few other necessities for employees and patrons. The automatic vendor that could supply these items when and where they were needed at any time of the day or night was the obvious answer.

Holding more promise than the present is the mechanical vending of the future — the vending of take-home products. That is, items of merchandise for use and consumption away from the point of purchase.

This market has yet to be created, and dependable automatic machines with versatility for coin and currency handling and attractive methods of displaying and presenting the merchandise to be sold, must be provided.

This step will not be easy. It requires experimentation and development, not only by machine manufacturers, but by experienced merchandisers. The possibilities in this broad field could

make our present success look like "peanuts," which, incidentally, was once the mainstay of the industry.

*Jack Lanagan*
PRESIDENT, STANDARD CHANGE-MAKERS, INC.

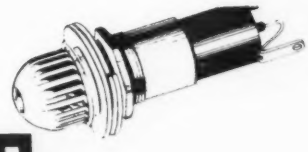
## Service vending—a vast new challenge to automatic merchandising

**WE'VE ALL READ** numerous articles about the tremendous growth of automatic merchandising, the remarkable increase in its gross sales, the many improvements in machines, and the variety and quality of products vended. Normally, when we think of automatic merchandising we think in terms of machines that vend products only . . . everything from candy and cigarettes to whole hot meals.

In the past few years, however, another whole new field has sprung up almost over night that certainly deserves the title of automatic merchandising . . . the vending of services through coin-operated machines . . . dramatically evidenced in the coin-operated unattended laundry.

Few of us can now drive from our office to our home without passing one or more coin-operated laundries. The "coin-ops," as they are called, have not only become a vast new phase of automatic merchandising (nearly $250 million in equipment sales alone), but they are also creating thousands of new commercial locations for product vending machines.

It is rapidly becoming imperative that the coin-op laundry owners, distributors, and machine manufacturers recognize that they are an integral part of the automatic merchandising field, and that the vending operators, and their associates in the product vending field, attempt to understand and assist this new segment of automatic merchandising. There are many areas of mutual interest, there are many mutual problems, and there are many benefits to be realized by both service vending and product vending . . . benefits that can only be derived by working together, pooling knowledge and experience. Together, product and service vending can grow to even greater proportions in both volume and public appreciation.

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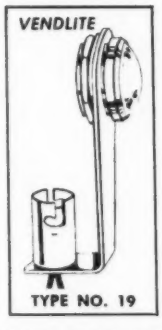
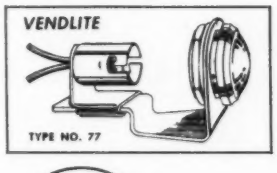


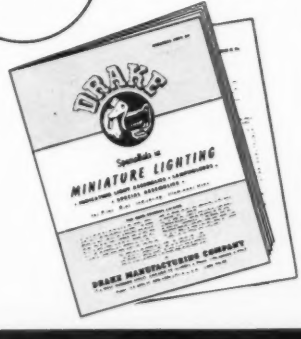




EMPTY

These practical Indicator Light Assemblies were specially designed by DRAKE for vending machine use. They feature a 1" pilfer-proof glass lens in both the horizontal and vertical styles. The bezels are of polished chrome, for attractive appearance. Their open construction aids heat dissipation. Lamps may be replaced from back of panel only, also a pilfering preventative. They are available in a full range of terminals.

Printed discs may be obtained with any wording which fits within the allowable space. *DRAKE now supplies these discs made from non-oxidizing, heat-resistant materials, which prevents disc discoloration.* Or VENDLITES can be supplied with plain lenses, convex, smooth, frosted on back, in an assortment of colors.

Better designed, precision-produced DRAKE units are specified by leading manufacturers in every field where Indicator or Controlled-Illumination Lights are used. Our experts will gladly help you to the efficient and economical answers, with better quality, better delivery and often, better prices.

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ROCKFORD, ILLINOIS


## Coin changer

→ *from Page V-10*

returns five dimes for the 50¢ coin. The quarter changers can return two dimes and a nickel, five nickels, or three nickels and one dime. Another quarter unit can be used to dispense tokens or tokens and change.

Depending on the combination of changers selected, the Multi-Changer has a maximum capacity of $300 in change.

Each of the three change makers in the Multi-Changer operates independently. Each unit has an individual coin slot, handle and return coin tray.

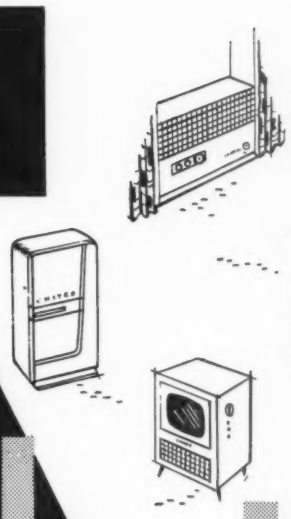
The complete unit measures 19 inches high, 26 inches wide and 8 inches deep. It weighs 82 pounds. The cabinet is fabricated from 14-gauge steel, and a 3/16-inch-thick outer steel vault is provided on the Model 300V Maximum Security Multi-Changer, which is designed for use in automatic laundries, parking lots and other exposed locations. Two heavy-duty, case-hardened screw-type locks are incorporated in the extra-security vault.

The Multi-Changer can be wall-mounted or attached to a metal stand. Special tamper-proof steel hangers are used for wall mounting to provide added security.

Coins are stored in aluminum tubes which have drilled holes for simple inspection to determine the level of coins in the tube. As a coin to be changed is dropped in the coin insert slot, it falls into the rejector mechanism which checks the weight, size and metal content of the coin. If the coin passes these "tests" it falls into the actuator mechanism. Rejected coins or slugs are deflected into the "reject" chute. Acceptable coins also follow this path when the machine is out of change.

In the actuator, the coin falls into a slot in the cam assembly. As the exterior handle is turned, the coin is forced against a lock lever; with the completion of the handle turn, the coin forces the lock lever to one side and the coin falls through to the cash box.

Change is released into the coin tray by means of a sliding plate mechanism. On the 50¢ coin changer dispensing two quarters, the slide plate assembly has two holes through which the quarters fall. As the handle is turned (after the coin is accepted in the actuator) the bottom plate in the sliding plate mechanism is positioned under the holes in the plate beneath the coin tubes and the change passes through. The sliding plate principle to dispense the coins is used on all the units.



# here's how positive product

# identification

## can help your sales

RCA Victor
Zenith
American AFCO St. Louis Furnace
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Immediate spontaneous recognition of your product on the showroom floor . . . this is what your entire promotion plan is geared to produce. And this is what you can expect with La France die cast name plates and decorative trim.

Three-dimensional cut-out letters with lustrous metal plated finishes are certainly attention getting . . . and your own trade mark or trade name design can be accurately reproduced by the La France craftsman. Choice of finishes and fasteners. La France specialized design and engineering facilities available at no charge. Worth looking into!

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. . . for the name in front!

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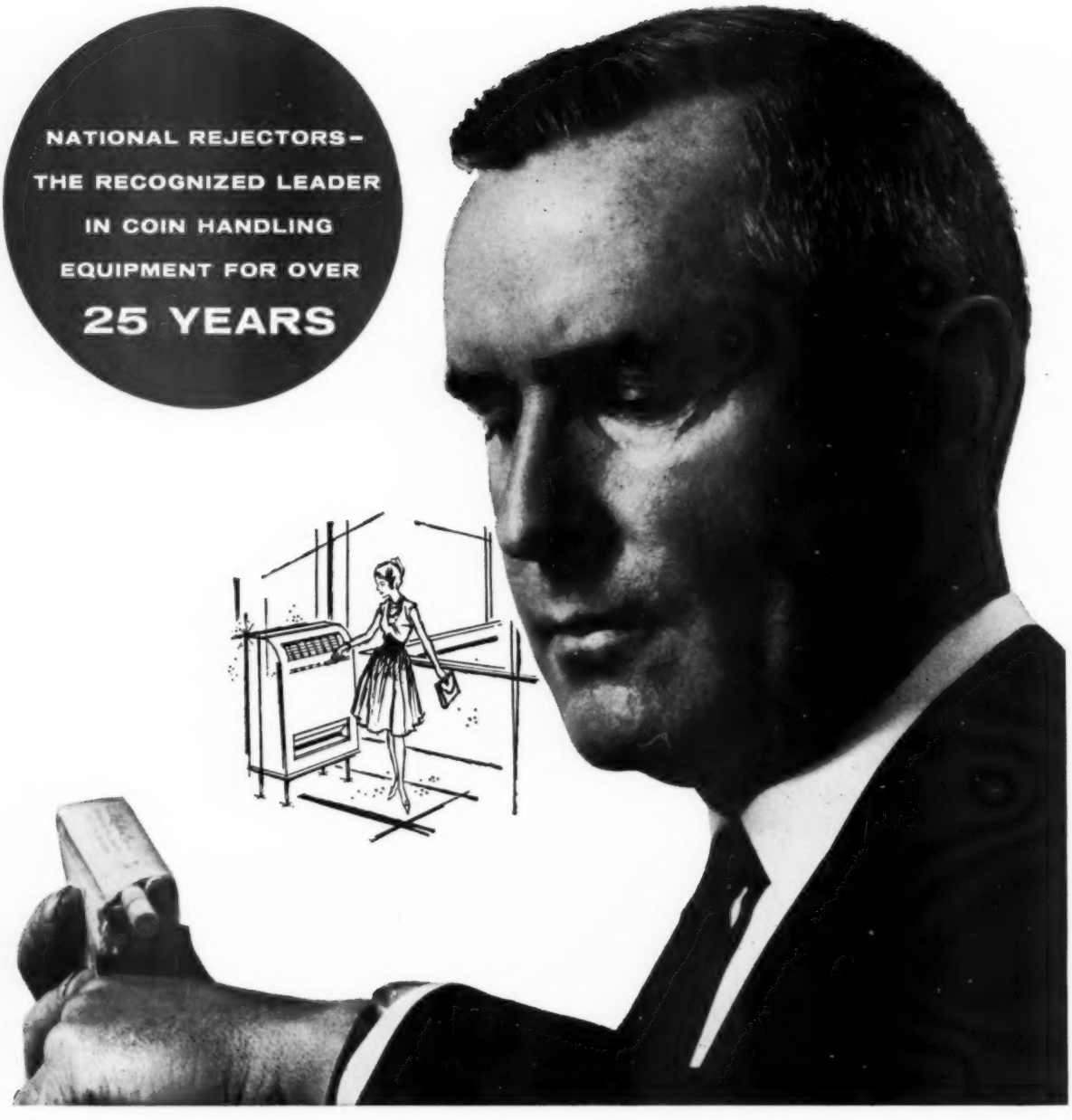

*Our Specialty: Quality Products Backed by Service*

National is truly National when it comes to service. Our trained sales engineers will school your men in all phases of coin handling —teach them how to keep your machines in perfect operating order.

There's no obligation involved. Training men is a plus only offered by National. Specify only National, and you also get the finest, most dependable coin handling equipment made.

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# New products for the porcelain enameling industry

*by William E. Pierce* • PORCELAIN ENAMEL INSTITUTE

WHEN I MENTION SOME OF THE applications on which we are now working as being new, at least 50 percent of those who read these comments say to themselves: "What's new about that? We tried it ten years ago and it didn't work!"

The things that make these projects "new" are the new economic considerations, the new operating conditions, the new competitive materials, and the new thinking of the public and its new impact on manufacturers' thinking. Conditions are changing constantly. These changes affect the potential success of any given application just as much as the changes and improvements in products and processes over the last 25 years.

Pascal wrote, "If the nose of Cleopatra had been shorter, the whole face of the earth would have been changed." Modern surgery can do this easily today, so let's use modern porcelain enamel practices to change at least a part of the face of the earth.

The engineering properties of porcelain enamel are the tools which, if used properly and to their fullest extent, should produce business from markets either heretofore studied and discarded, or completely new in concept.

### The automotive market

Those who have replaced a muffler or tailpipe on the family car will remember the unpleasant shock when the bill was presented, to say nothing of the loss of time, loss of use of the car, and the general inconvenience of the entire procedure. If yours is a two-car family, this irritation is doubled. If each car has a dual exhaust system, you probably have one car or the other in the shop at frequent intervals. And if each car has a dual system complete with muffler and resonator, you then have 16 pieces of sheet metal which are under constant attack by corrosion: 4 mufflers, 4 resonators, 4 exhaust pipes, and 4 tailpipes.

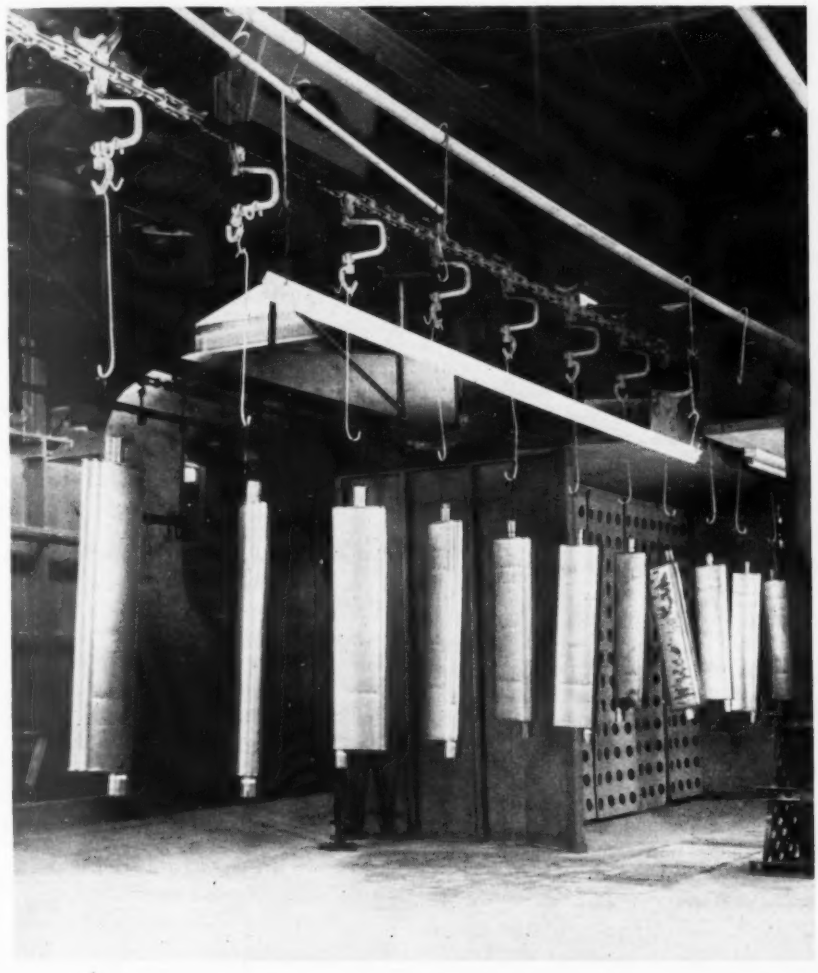
This king-sized headache is only partially relieved by the manufacturers' use of special steel. But remember! The muffler manufacturer could not sell this minor improvement to the automobile builder until he was willing to pay the premium. The car builder was only able to provide this improvement when he knew an aroused public was ready to pay the price for the quality it wanted.

What other changes caused all this to happen?

*Driving habits changed.* With two cars, short runs to the store or neighbor's house in one car would not even heat the muffler sufficiently to drive off the condensate that had collected overnight. Condensate continued to form while parked. If the car had a dual exhaust system, one side was always cooler than the other, hence uneven rates of corrosion.

*Continued* →

*Ceramic coated mufflers entering furnace to be fired at high temperature.*



The other car might be used to drive only to and from the plant or office, and the same conditions prevailed.

*The fuel has changed.* Higher horsepower engines require more additives in the gasoline. Following combustion, some of them are trapped in the condensate, forming metal-consuming acids.

So now we find the following changes: 1. Engine design, 2. Exhaust system design, 3. Driving habits, and 4. Number of cars per family.

The car builders are searching constantly for ways to improve the quality of their exhaust systems. They feel a definite responsibility to provide satisfactory equipment, at least for the first owner and longer if it can be justified economically. To do this, all of the car builders want three or more years life from their exhaust systems . . .

Elmer Burnitt, vice president, operations for American Motors, told me, "Anyone can build a good expensive car, but it takes a lot of work to build a good inexpensive car."

Unfortunately, there are no known short-time tests for evaluating candidate materials for mufflers. The best test comes by installing them on a car and running until they are considered unsafe or too noisy. Therefore, with our comparative lack of field trial data, we cannot determine the life of a ceramic coated muffler accurately. We do know, however, that in lab tests, against all other commonly used materials, we have more than doubled the life expectancy of the best competitive material.

This is accomplished by porcelain enamel's superior resistance to corrosion caused by the combined action of acid and temperature. Porcelain enamel is also unaffected by road salts. Thermal shock resistance can be built into a coating for mufflers, and impact resistance is necessary to keep the coating intact when struck by stones.

### Sidelight advantages

One of the largest truck manufacturers reported acoustical tests showing a 3 db. reduction in noise level on a muffler coated with modified A-19 as compared with an identical uncoated muffler. We think that the "stiffening" effect of the coating on the metal contributed to this improvement. Tests on automobile mufflers are soon to be completed to determine this.

With all these things in our favor, everyone connected with this program, car builders, muffler manufacturers, frit companies, and some enamelers, have redoubled their efforts to solve the problem of processing this complicated item. As soon as we know how to produce uniform internal coatings consistently, and at reasonable cost, we all will enjoy the profits of a new, large-volume market.

*Conventional muffler in contrast to one which has been ceramic coated. Both mufflers had been in service equivalent to 25,000 miles of operation.*

### Distribution transformer covers

Distribution transformer covers represent another possible market. Utilities use these transformers all over the country to step down transmission voltage to a safe level for household use. They are usually mounted on a pole in back of a group of houses. In operation, they produce a hum and some warmth.

Small animals, squirrels, birds, etc. become curious and walk all over the top of the transformer. When they touch the uninsulated wire while standing on the grounded cover, the animal dies and the transformer usually must be replaced. This is a real problem for the utilities, not to mention the animals.

Transformer manufacturers have tried various methods of protection, but the one we hope will succeed is the one using porcelain enamel. Its dielectric properties are well known and, because it can be a controlled thickness, we believe we can provide an extra feature requested by the utilities. This is one designed to discourage repeat visits of the animals by allowing a predetermined amount of voltage to leak through. This will give the unwanted visitor a slight charge, sufficient to cause his safe, but immediate, departure, thus saving the life of both the animal and the transformer. With 12 KV to ground, we hope to produce a controlled dielectric up to 10 KV to accomplish this.

Naturally, weatherability of the coating is an important requirement. With all these properties inherent in our material, we are optimistic about capturing this market.

### Electroluminescence

Many have heard about, and have shown great interest in, a new type of light source — electroluminescence. Today we use point or line sources of light, the incandescent bulbs or fluorescent tubes. Tomorrow we will have area sources.

An electroluminescent lamp of ceramic construction is made of many layers of ceramics, enclosing a phosphors, which is sensitive to alternating current, and all fired on a steel plate which forms one of the conductors. The other conductor is found in an electrically conducting ceramic coating.

The center of this lamp must be insulated from the plate and from external contact, so we use the dielectric properties of porcelain enamel.

Again, since this is essentially a capacitor, we must vary the dielectric constant to provide the maximum value possible, without destroying other properties.

To have the lamp useful for outside installations, it must be weather resistant, also.

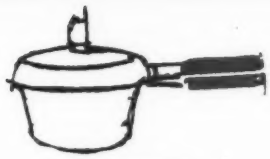
Two coats have to be transparent and tough. The impact resistance of this lamp is far greater than the fragile types we now use.

### For the farmer

Another area of exceptional activity at this moment is the farm tractor muffler field. In most cases, tractor manufacturers will use paint only on the out-

*to Page 99* →

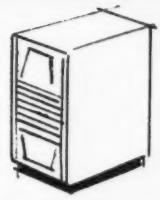
METAL FURNITURE



PRESSURE COOKERS

WAFFLE IRONS

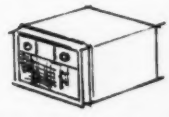
VACUUM CLEANERS



DEHUMIDIFIERS

FLOOR POLISHERS

# MACCO BLU-COAT



AIR CONDITIONERS

KITCHEN CABINETS

WATER COOLERS

IRONERS

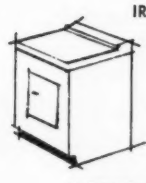
BARBECUERS

the one

## PRACTICAL, ECONOMICAL

water soluble

## RUST PREVENTIVE

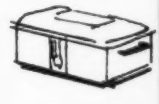


CLOTHES DRYERS

that lends itself to so many applications

**STEEL • CAST IRON • FORGINGS • DIE CASTINGS**

BLENDERS



ROASTERS

**PREVENTS RUST** between production operations and assembly...during transportation and storage. Facts and costs from your Macco man are yours for the asking!

FANS

CLOCKS

MACCO BLU-COAT is applied easily in spray washers or dip tanks . . . another of the many reasons why

**THE METALWORKING INDUSTRY LOOKS TO MACCO FOR LEADERSHIP**

MACCO PRODUCTS COMPANY

9228 S. SANGAMON ST., CHICAGO 20, ILLINOIS
PRESCOTT 9-0800

## METAL PRODUCTS STATISTICS

| | | 1960 (Units) | 1959 (Units) | % Change |
|---|---|---|---|---|
| Gas Furnaces | April | 63,900 | 73,200 | -12.7 |
| | Jan.-Apr. | 245,000 | 268,800 | - 8.9 |
| Gas Boilers | April | 9,404 | 9,746 | - 3.5 |
| | Jan.-Apr. | 33,912 | 30,419 | +11.5 |
| Gas Conversion Burners | April | 7,400 | 6,300 | +17.5 |
| | Jan.-Apr. | 30,800 | 25,100 | +22.7 |
| Oil-Fired Central Heating Equipment | March | 42,225 | 38,831 | + 8.7 |
| | Jan.-Mar. | 126,199 | 118,539 | + 6.5 |
| Gas Ranges, Free-Standing | April | 128,000 | 136,600 | - 6.3 |
| | Jan.-Apr. | 515,600 | 545,300 | - 5.4 |
| Gas Ranges, Built-In | April | 29,900 | 29,100 | + 2.7 |
| | Jan.-Apr. | 106,300 | 92,700 | +14.7 |
| Gas Water Heaters | April | 214,000 | 261,300 | -18.1 |
| | Jan.-Apr. | 890,800 | 1,053,100 | -15.4 |
| Gas Vented Recessed Wall Heaters | April | 30,600 | 31,800 | - 3.8 |
| | Jan.-Apr. | 109,600 | 127,200 | -13.8 |
| Gas Floor Furnaces | April | 7,200 | 6,300 | +14.3 |
| | Jan.-Apr. | 21,200 | 23,600 | -10.2 |
| Gas Direct Heating Equipment | April | 20,700 | 25,600 | -19.1 |
| | Jan.-Apr. | 82,700 | 83,400 | - 0.8 |
| Gas Unit Heaters & Duct Furnaces | April | 9,600 | 8,200 | +17.1 |
| | Jan.-Apr. | 45,400 | 39,300 | +15.5 |
| Gas Incinerators | April | 4,000 | 3,500 | +14.3 |
| | Jan.-Apr. | 15,800 | 12,900 | +22.5 |
| Electric Household Refrigerators | April | 294,000 | 301,000 | - 2.3 |
| | Jan.-Apr. | 1,201,200 | 1,197,100 | + 0.3 |
| Electric Farm & Home Freezers | April | 105,800 | 112,900 | - 5.3 |
| | Jan.-Apr. | 368,600 | 403,700 | - 8.7 |
| Electric Ranges, Free-Standing | April | 68,300 | 79,700 | -14.3 |
| | Jan.-Apr. | 305,000 | 347,100 | -12.1 |
| Electric Ranges, Built-In | April | 58,700 | 56,400 | + 4.1 |
| | Jan.-Apr. | 235,100 | 217,000 | + 8.3 |
| Electric Water Heaters | April | 53,300 | 71,100 | -25.0 |
| | Jan.-Apr. | 237,600 | 284,200 | -16.4 |
| Electric Dishwashers | April | 50,700 | 40,200 | +26.1 |
| | Jan.-Apr. | 189,000 | 159,300 | +18.6 |
| Electric Food Waste Disposers | April | 61,200 | 63,200 | - 3.5 |
| | Jan.-Apr. | 240,300 | 232,300 | + 7.8 |
| Combination Washer-Dryers | April | 10,404 | 11,507 | -10.0 |
| | Jan.-Apr. | 59,433 | 65,222 | - 9.0 |
| Washers—Automatic & Semi | April | 175,983 | 202,259 | -13.0 |
| | Jan.-Apr. | 843,899 | 903,836 | - 7.0 |
| Washers—Wringer & All Other | April | 59,845 | 72,113 | -17.0 |
| | Jan.-Apr. | 235,769 | 286,521 | -18.0 |
| Electric Dryers | April | 35,659 | 43,945 | -19.0 |
| | Jan.-Apr. | 240,680 | 260,630 | - 8.0 |
| Gas Dryers | April | 17,554 | 23,807 | -26.0 |
| | Jan.-Apr. | 122,708 | 130,050 | - 6.0 |
| Vacuum Cleaners | April | 278,391 | 317,402 | -12.3 |
| | Jan.-Apr. | 1,171,122 | 1,177,871 | - 0.6 |
| Metal Furniture | April | * | * | -11.0 |
| | Jan.-Apr. | * | * | + 1.0 |
| †Television | April | 422,551 | * | * |
| | Jan.-Apr. | 2,001,998 | 1,779,801 | +12.5 |
| †Radio (1) | April | 1,230,323 | * | * |
| | Jan.-Apr. | 5,696,029 | 4,637,859 | +22.8 |
| Typewriters | April | 97,673 | * | * |
| | Jan.-Apr. | 336,692 | * | * (a) |
| Compressor Bodies | Jan.-Dec. | | 4,926,657 | +37.0 |
| Steel Barrels & Drums | March | 2,450,223 | 2,898,655 | -15.5 |
| Steel Pails | March | 5,584,168 | 6,639,223 | -15.9 |
| Room Air Conditioners | April | 218,500 | * | * |
| | Jan.-Apr. | 643,600 | * | * |
| Unitary Air Conditioners (3) | Jan.-Dec. | | 285,935 | * |
| Heat Pumps | Jan.-Dec. | | 35,157 | * |

(1) Including auto receivers (2) Except for household refrigerators
(3) Including heat pumps (4) No change (a) Increase over 1958
* Not reported † Output — all other figures are factory shipments or factory sales

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

## Design engineers

→ *from Page 5*

waukee, "the problems of fabricating these newer metals and alloys by welding must also be resolved, so that they can be used effectively.

"New welding processes are also necessary to keep product costs low while maintaining high quality," Chyle continued, "since we are living in a world of competition, and investigators are constantly finding ways to do things better and cheaper."

He described several new processes that may aid manufacturers, two of them developed by the Russians. One of these was friction welding.

Electron beam welding, in which the electrons, in a vacuum, shoot out from a tungsten-wire filament to the piece to be welded, is one very promising new process, said Chyle. It penetrates the materials deeply and can join the most reactive or refractory metals without contamination. Metals on which it has been successfully used include molybdenum, beryllium, tantalum, zirconium and hafnium, as well as some of the less exotic alloys like stainless and carbon steels.

MPM PHOTO

*Jones & Laughlin Steel Corp.'s Stainless and Strip Div. booth featured futuristic design made up of stainless steel panels.*

During the conference, Robert Esken of the Bendix Aviation Corp. said that design engineers can cut costs by designing parts that can easily be assembled automatically, since a slight increase in materials or fabricating cost can often be outweighed by the low cost of automatic assembly.

This year's show represented the fifth annual concurrent show and conference. It represented the largest exhibit to date, as well as record-breaking conference attendance.

The sixth show and conference will be held at Cobo Hall, Detroit, Mich., May 22 through 25, 1961.

# MPM

## new supplies and equipment

### Utility Handle

A two-piece stamped steel utility handle for vending equipment and other applications has been announced. The handle is available in

chromium, brass, and enamel finish, with 4-inch or 3¾ inch centers, and is catalogued No. 61-707 and No. 61-707-A.

Write Dept. MPM, Industrial Hardware Div., National Lock Co., Rockford, Ill.

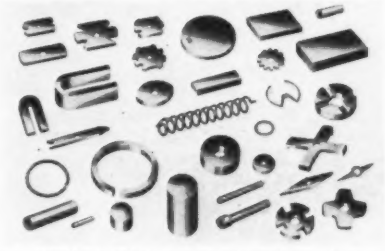
### Plunger-Type Toggle Clamp

A medium duty plunger-type toggle clamp with a rated holding pressure of 1600 lbs. has been introduced. Designated Model 630, the clamp is designed for jobs requiring fast holding action. It locks in either a push or pull direction. A flared end and heavy vinyl covering on the handle prevents hands from slipping forward into the work when closing the clamp.

Write Dept. MPM, Detroit Stamping Co., 330 Midland Ave., Detroit 3, Mich.

### Permanent Magnet Alloy

Development of an improved "Cunife" copper-nickel-iron permanent magnet alloy, said to posses high coercive force and energy product values, as well as excellent ductility, malleability, and machinability, has been announced. The alloy can be readily stamped, machined, or otherwise formed by conventional methods into a wide variety of complex, intricately-shaped parts which require no costly finishing operations. Field test results and actual application experi-



ence indicate that timer motors for major appliances, speedometers, aircraft instruments, electronic equipment, etc. are among the many types of products in which it can be used advantageously to obtain low cost per unit of useful magnetic energy, according to the manufacturer.

Write Dept. MPM, Hoskins Mfg. Co., 4445 Lawton Ave., Detroit 8, Mich.

### Spray Nozzle

A spray nozzle, providing a full square spray pattern and extremely wide angle projection, has been announced. It is designed for installa-

tion on spray manifolds where open area is dimensionally limited. The average spray angle of 110° provides wide coverage within a short distance between spray nozzle and work. The square spray pattern on manifold, multiple-nozzle installations, permits keeping spray overlap to a minimum while still providing total coverage.

Write for Data Sheet 8584 to Dept. MPM, Spraying Systems Co., 3203A Randolph St., Bellwood, Ill.

### Color Anodized Aluminum Die Castings

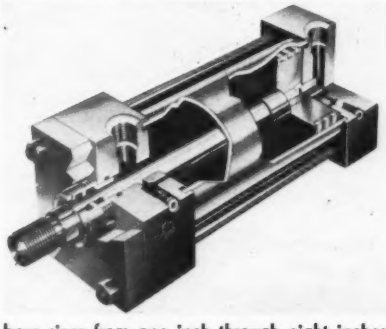
Aluminum die castings that are completely color anodizable are now being manufactured. Colors are said to be crisp and clean, can be thoroughly controlled from batch to batch, and can be put over three types of basic finishes; satin, polished bright, and semi-gloss matt.

Hamiloy, as the new group of alloys is called, has tensile and yield strength equal to the standard alloys used in the die casting industry, and has five to seven percent elongation.

Write Dept. MPM, Hamilton Die Cast, Inc., 240 N. "B" St., Hamilton, Ohio.

### Hydraulic Cylinder Line

A line of power cylinders for use in medium-high pressure hydraulic service has been announced. Designed for use with 1,000 psi pumps, the Series L cylinders are available in



bore sizes from one inch through eight inches, all designed to operate at full 1,000 psi hydraulic pressure. They are of square head and tie rod design, and provide case hardened and hard chromium plated piston rods as standard.

Write Dept. 320, Hannifin Co., 501 S. Wolf Rd., Des Plaines, Ill.

### Mechanical Differentials

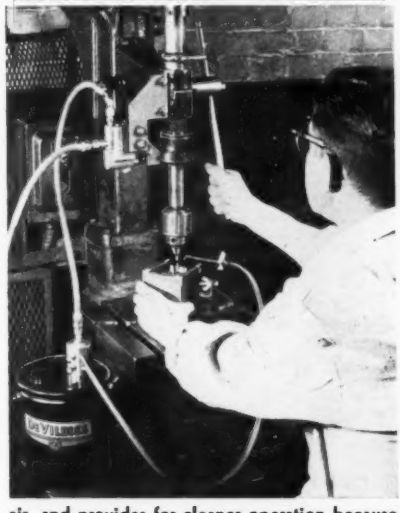
An inexpensive mechanical differential, useful for adding and subtracting shaft movements, reversing shaft rotation, as variable speed chang-

ers, or as a clutch or brake, has been developed. The differentials are expected to find wide usage in vending machines, instruments, tuning devices, and similar applications, and may also be used for experimental mockup designs to test engineering ideas and prove mechanical principles.

Write Dept. MPM, Gries Reproducer Corp., 400 Beechwood Ave., New Rochelle, N. Y.

### Mist Coolant Device

A mist coolant device, featuring an intermittent spray, is now available for drill presses, saws, and other cutting tools. The intermittent feature is said to eliminate waste of coolant and



air, and provides for cleaner operation because the mist is off during loading and unloading operations. The cutting oil is applied at the point of operation, and gives the added cooling affect of air, according to company engineers. Other advantages are longer tool life, easier-handled chips, and better finishes.

Write Dept. MPM, The DeVilbiss Co., Toledo, Ohio.

### Heavy Duty Impactool

A heavy duty Impactool, which is said to have 91 percent faster rundown speed, has been developed. Called the Size 810 Impactool, the tool is more compact and permits greater ma-

neuverability in cramped quarters for hard-to-get-at nuts. It delivers 1000 impacts per minute with a free speed of 4300 rpm. A direct drive between the motor and hammer gives greater torque and speed to make the tool suited for heavy duty nut running.

Write for Form 5285 to Dept. MPM, Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

### Plastic Equals Metal

A vinyl plastic capable of performing functions that only metal could handle has been announced. Called Hi-Temp Geon, the vinyl is said to withstand temperatures 60° higher than conventional vinyls, and can be used in household hot water plumbing and industrial hot acid piping.

The new material is in pilot plant production and, until commercial production facilities are completed next year, will be available in limited quantities.

Write Dept. GD-4, B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

**Lustrous appeal in lamp components.** A New Jersey job plating shop uses BURNEK 22 for bright burnishing lamp parts after brass plating. Parts are ball and self burnished for 30 minutes, rinsed, dried, and lacquered.

**Bright, stain-free handbag parts.** A company making handbags and pocketbooks uses BURNEK 22 for burnishing small steel frames, corners, and ornaments before bright nickel and gold plating. After burnishing, parts are rinsed, dipped in dilute sulfuric acid, and plated.

**Clean, scratch-free zipper pulls.** A large Eastern zipper manufacturer uses BURNEK 22 in open-end oblique barrels to remove stamping oil and bright burnish brass and steel parts. Parts are ball burnished 45 minutes.

# Burnish parts mirror-bright at low cost with BURNEK 22!

Brass, copper, nickel, silver, gold—you name it, Wyandotte BURNEK® 22 can burnish it to a bright luster with exceptional savings! Even handles short runs on aluminum, zinc, steel, and stainless-steel parts.

Most important, BURNEK 22's low cost and short running time help you slash burnishing costs to the bone. So why wait? Call your Wyandotte representative for a revealing demonstration in your own plant. Do it today!

*Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California, and Atlanta, Georgia. Offices in principal cities.*

*The Best in Chemical Products for Metal Finishing*

**Wyandotte CHEMICALS** J. B. FORD DIVISION

# MPM

## industry meetings

### HOUSEWARES

National Housewares Manufacturers' Association's 33rd National Housewares Exhibit, Convention Hall, Atlantic City, N. J., July 11-15, 1960.

### ENGINEERING

Production Engineering Show, Navy Pier, Chicago, September 6-16, 1960.

### MACHINERY

Second Coliseum Machinery Show, Chicago Coliseum, Chicago, September 7-15, 1960.

### PORCELAIN ENAMEL

Porcelain Enamel Institute Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., September 26-28, 1960.

### STANDARDS

The Ninth Annual Meeting of the Standards Engineers Society, Hilton Hotel, Pittsburgh, Pa., September 26-28, 1960.

### WELDING

The American Welding Society Fall Meeting, Penn-Sheraton Hotel, Pittsburgh, Pa., September 26-29, 1960.

### IRON AND STEEL

The Association of Iron and Steel Engineers' Exposition and Convention, Cleveland Auditorium, Cleveland, Ohio, September 27-30, 1960.

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## Metal Show Set for October

Leading firms in many areas of the metal industry have reserved display space for the 1960 Metal Show, sponsored by the American Society for Metals. The show will be held October 17-21 in the Philadelphia Trade and Convention Center.

The 42nd National Metal Congress will run concurrently with the Metal Show. Its projected 250 technical papers, panels and symposia will cover the most significant developments in metal science and engineering during the past year. A special area of the Metal Show, known as the Steel Arena, will have as its theme, "Build it Better with *America's* Steel — Basic Material of Construction." It will show the many steel applications in the home, industry and outer space.

**We're talking about the use of Pre Finish Metals.**

A fabricator of metal products eliminates many production and design limitations through the use of Pre Finish Metals. Pre Finish Metals, Incorporated provides organosol, plastisol, epoxy, vinyl, acrylic or alkyd base finishes.

Laminate films such as DuPont Teslar,* wood grains, printed and embossed finishes are available in any of the above coatings - or on any metal.

You can roll, form, draw, punch or stamp without marring the finish.

Pre Finish Metals, Incorporated provides the widest coated flat sheet in the industry - 18" to 60" widths.

There is a new era in the fabricated metals field and Pre Finish Metals is part of it.

*Dupont's trademark for it's PVF Film

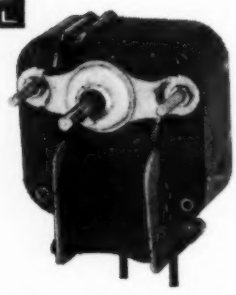
**PRE FINISH METALS**
INCORPORATED
COATERS OF CONTINUOUS COIL

**Formerly: All Weather Steel Products, Incorporated**

**2111 East Pratt Boulevard • Elk Grove Village, Illinois**

**Chicago Phone: NAtional 5-9330**

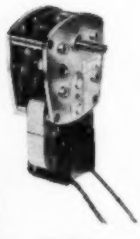
BREVEL



This shaded pole motor is available as a high speed motor alone or as the backbone of BREVEL's quality gear motors.

every day Brevel meets unusual specifications for small motor applications

Your new appliances get into production—and to market—faster, at lower cost when BREVEL supplies your motors. Chances are we have a suitable design! You can rely on BREVEL's experienced specialization to design, engineer, and volume-produce precision motors that give consistently superior service at low cost. We may be making—right now—the motor you think is "impossible." Write, wire, phone NOW . . . and find out.



Series S
Open Spur
Gear Motors

Series W
Open Worm
Gear Motor

Series F
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Gear Motor

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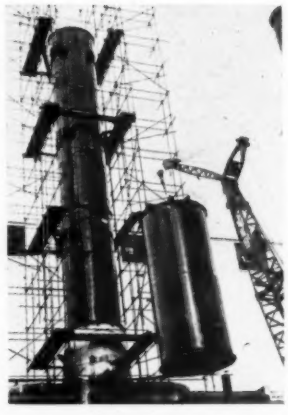
# New life for smokestacks

## A. O. Smith develops corrosion-resistant porcelain enameled stack

STEEL SMOKESTACKS that are said to "offer a life span of more than three to five times that of plain steel stacks in similar service," have been developed by the Process Equipment Div., A. O. Smith Corp.

The increased life of the new smokestacks is attributed to a coating of porcelain enamel formulated to withstand the excess condensate and intermittent operation encountered in normal boiler house operation.



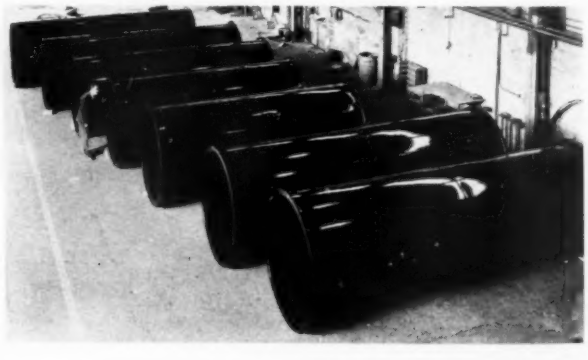
*A crane holds the last eight-foot diameter section of the glass-protected smokestack being installed at the Joseph Schlitz Brewing Co., Milwaukee, Wis.*

According to A. O. Smith engineers, about 95 percent of all unlined carbon steel smokestack failures are caused by corrosion inside the stack. Moisture in flue gases, when cooled to approximately 300° F. or less, condenses against the insides of the stack. Since all fuels contain some sulphur, the sulphurous gases formed in combustion mix with the condensed moisture to form acid compounds which attack steel. The acid attack is more prevalent in the upper portion where low temperatures and condensation are most common. The company says their porcelain enamel provides "the toughest protection against acid condensate."

The A. O. Smith "glass" coating, which is fired at 1600° F., is said to resist deflection up to the yield point of the parent steel with no damage to the protective coating.

Among the advantages claimed by the company for the porcelain enameled smokestacks are light weight (and consequently lower foundation costs), long wear, faster erection, because sections are bolted and not welded, and attractiveness (the stacks are available in a wide variety of exterior colors).

*Seven glass-protected sections, subsequently installed at the Oscar Mayer Co., Madison, Wis., are given a final check prior to shipment. All 14 of Mayer's smokestacks have been manufactured by A. O. Smith.*



## Steel Kitchen Cabinets Gain

Over 55 percent of all kitchen cabinets now being installed are steel, according to the Better Kitchens Institute. The figures were compiled on the basis of an independent nationwide survey conducted among appliance kitchen dealers.

M. L. Ondo, vice president, Youngstown Kitchens, and president of the association, predicts that steel cabinet sales will rise 20 to 25 percent this year as a result of increased activity in the quality home market, apartment and multi-dwellings, housing projects, and in the remodeling field.

## Venezuelan Plant Planned For Hupp Appliances

A program to manufacture and market appliance products of Hupp Corp. in Venezuela has been announced.

A 250,000-sq.-ft. plant will be built in the industrial city of Valencia to manufacture under license Hupp's Gibson brand refrigerators and room air conditioners and Perfection brand gas ranges and certain kerosene cooking stoves. Capacity operations are expected within three years.

## Caloric's R&D Center Opens

The new research and development center of Caloric Appliance Corp. is in full operation. The center includes an engineering and drafting department, testing laboratory, product styling department, model shop, and engineering offices.

George Myler, director of product planning for Caloric, is in charge of the new center.

*A section of the testing laboratory at Caloric's new research and development center at Topton, Pa. Technician in center uses reflectometer to check cakes baked in test ovens.*

## Lau Purchases Viking

The Lau Blower Co. has purchased assets of the Viking Air Products Div. of the Crane Co. for an undisclosed amount. The purchase included tools, dies, jigs, finished and unfinished inventory, and assumption of the lease on Viking's 146,000-sq.-ft. Cleveland plant.

Viking's line of products includes home humidifiers, boosters for ducted air systems and furnace filters. Lau manufactures window and attic fans, central ventilating units, kitchen range hoods, and wall-hung medicine cabinets.

## Whirlpool Establishes Refrigeration Products Div.

President R. E. Brooker of the Whirlpool Corp. has announced the formation of a refrigeration products division. The move brings the company's manufacturing facilities at St. Paul, Minn., and Evansville, Ind., under the administrative supervision of a vice president, refrigeration products. Named to this new position is John Platts, presently vice president and general manager of the Evansville Div.

PLATTS

In other supervision changes, Kenneth C. Williams, now assistant general manager of the Evansville plant, becomes general manager there. The formation of the new division parallels last summer's announcement of a laundry products division, encompassing manufacturing plants at Marion and Clyde, Ohio, and St. Joseph, Mich.

Neil Griebenow, vice president and general manager of the St. Paul Div., has announced he will retire at the end of the year, and he has named James Bourquin general manager of the St. Paul plant. Griebenow will continue to headquarter in St. Paul and will work on special assignments, reporting directly to President Brooker, until his retirement.

## Gibson Expands Facilities

A $1.8 million replacement and modernization program at its Gibson Refrigerator Div. in Greenville and Belding, Mich., has been announced by the directors of Hupp Corp.

The program calls for installation of a new automated shearing line, relocation of forming equipment, and addition or replacement of other machinery and material handling equipment.

## Oldest Maytag Washer Located in Alberta

Mr. and Mrs. James Ballantyne of Lethbridge, Alberta, Canada, have been named winners in a nationwide search to locate the oldest Maytag washer in Canada.

The winning entry, a 1911 electric motor Maytag, was still in daily use after almost fifty years of continuous service. The elderly Ballantyne couple received a new Maytag automatic washer in exchange for their antique model. The old unit will be exhibited this fall at the Canadian National Exhibition at Toronto.

*Mr. and Mrs. James Ballantyne demonstrate their 1911 Maytag washer, the oldest Maytag machine uncovered in a nationwide search in Canada.*

## Crane Buys West Coast Firm

Crane Co. has purchased the fixed assets and inventory of the General Air Conditioning Corp., Los Angeles. General Air Conditioning manufactures heat pumps, reverse cycle air conditioners and kitchen equipment, including range-refrigerator-sink combinations.

The company will be operated as a division of Crane's Plumbing-Heating-Air Conditioning Group, which is headquartered in Johnstown, Pa.

## Kelvinator and Japan Firm Sign License Agreement

A licensing agreement between Matsushita Electric Co., Ltd., Osaka, Japan, and Kelvinator International Corp., has been officially validated by the Japanese government.

Under terms of the agreement, Matsushita will build Kelvinator-designed compressor assemblies for incorporation in its own brand of household refrigerators, and will also build complete Kelvinator and Leonard brands of household refrigerators for distribution in Asian markets. Kelvinator will provide compressor design information

and technical assistance, and distribution facilities in Southeast Asia for Kelvinator and Leonard refrigerators manufactured by Matsushita.

Kelvinator also announced the formation of a new manufacturing licensee to build Kelvinator and Leonard household refrigerators in India. The new firm, to be known as Kelvinator of India, Ltd., was formed jointly by Kelvinator International, Electronics Ltd. of New Delhi, currently manufacturing Kelvinator and Leonard room air conditioners, and Spencer & Co. of Madras, distributor of Kelvinator and Leonard products in India since 1946.

Construction of an initial 75,000-sq. ft. building by the new company will begin in the fall, and the plant is expected to be in operation by 1961. The initial production goal is 10,000 refrigerators annually. Kelvinator reports that in spite of India's population of 400 million, only about 100,000 electric refrigerators are currently in use.

## Howell Acquires Diehl Motors

Howell Electric Motors Co. has acquired the entire line of totally enclosed flat-type motors from Diehl Mfg. Co., a division of The Singer Mfg. Co.

## Urbach of O. Hommel Dies

Herman R. Urbach, treasurer and general manager of The O. Hommel Co., died at his home June 9. He had been with the company 57 years.

Mr. Urbach was a past president of the Pittsburgh Paint, Varnish and Lacquer Association and a charter member of the Chartiers Valley Management Association.

## Akers New SMNA President

Stanley R. Akers, president of Meilink Steel Safe Co., has been elected president of the Safe Manufacturers National Association.

AKERS

Akers has been president and major stockholder since 1942 of the Toledo manufacturer of office and home safes, insulated files and business machine stands. He also heads Giantview-General Television Network, Detroit, producer of regional closed circuit television programs, and Hercules Tube Co., manufacturers of business machine stands.

## Dudek & Bock Merges With Advance Spring

Dudek & Bock Spring Mfg. Co. has acquired the Advance Spring Corp., Chicago, and merged it into their own company. The facilities of Advance Spring have been moved to a new 30,000-sq.-ft. building adjoining the present Dudek & Bock factory.

According to Dudek & Bock, the consolidation of the two firms to one location makes a sales potential that can exceed $6 million. The merger expands Dudek & Bock's sales operation throughout the country and into foreign markets.

*Joseph Dudek, president (left) and Stanley Bock, secretary, Dudek & Bock Spring Mfg. Co.*

*to Page 82* →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Thor SPEED MOTORS

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Put your porcelain enamelling requirements in the hands of Hommel's specialists and be assured of the best in both product and service. You'll find Hommel Cover Coats give broader coverage and more uniform texture . . . with no costly production tie-ups. Available in pure white or brilliant and pastel colors.

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## Utility Appliance Markets Char-Glo Products

Utility Appliance Corp. has obtained exclusive national and international distribution rights for all Char-Glo home cooking products. The Char-Glo indoor and outdoor gas-fired charcoal broiling units, manufactured by the Joe Del Francia Co., Inc., will be distributed through the Gaffers & Sattler Product Division.

## Dearborn Buys Sequoia

Purchase of the Sequoia Mfg. Co. of San Carlos, Calif., has been announced by the Dearborn Stove Co.

Sequoia will continue operations as a wholly owned subsidiary of Dearborn, manufacturing gas-fired central heating equipment for residential and commercial installation. Dearborn will continue manufacture of area heating units, evapotive air coolers and outdoor cooking equipment in its Dallas plant.

## Tappon Introduces the Fabulous "400" for gas

A gas range said to be new in concept of design, placement of features, and with many new convenience ideas incorporated has been introduced by The Tappan Co. and their subsidiary, O'Keefe and Merritt.

The new gas Fabulous "400" was co-designed and engineered by the two companies. Available in 40 and 30-inch models, the unit features a large, all-chrome oven, a separate broiler and four top burners. The new "400" can be mounted on a metal or wood cabinet or hung on a wall.

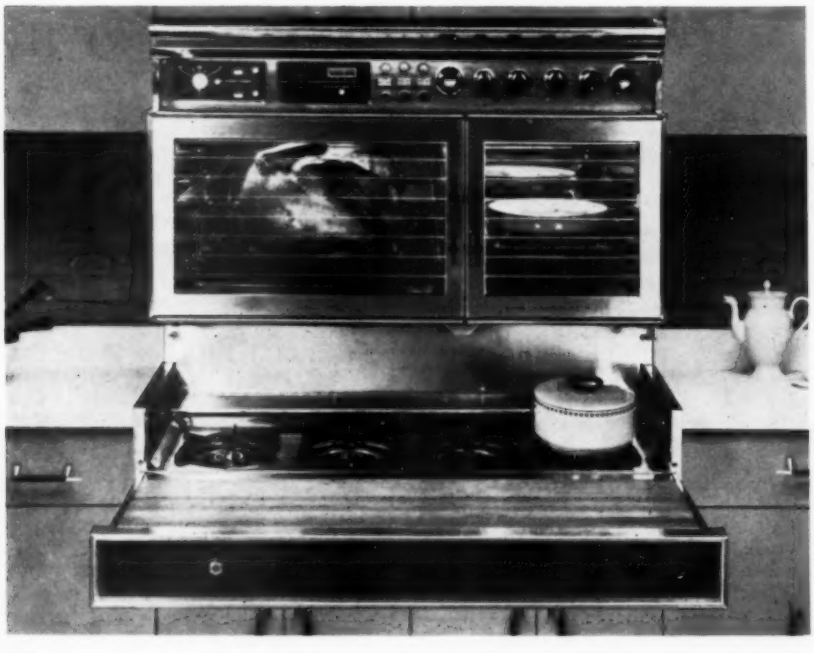
Other features include an eye-level control panel across the top of the range which houses all controls for the oven, broiler and top burners. Also included on the control center are the thermostat dial, automatic clock, automatic roast control, and rotisserie. A "hide-away" top slides back and locks under the broiler-oven section when not in use. When the top is pulled out, the four stationary burners fall into place.

The oven has been designed to eliminate unsightly openings for vents. This allows venting into the room by means of concealed openings at the top of the oven doors. The unit may also be vented outside the house.

The large oven on the left side and the broiler on the right side have been relocated so the homemaker "faces" the food, eliminating any reaching back into the range to handle hot foods. The oven carries a low temperature feature for warming, keeping foods warm, or defrosting.

Both Tappan and O'Keefe & Merritt will offer versions of the new gas range, different in trim and feature layout, but similar in design and major features. Production dates will be announced later.

*(Editor's note: A seven-page article on an expansion program at Tappan's Mansfield plant begins on page 34 of this issue.)*



## Capital Outlays up 5 Percent

First quarter capital appropriations reached $3.8 billion, a five percent rise over the first quarter of 1959, according to the *Newsweek* quarterly survey of capital appropriations conducted by the National Industrial Conference Board.

The survey found that 26 percent of the first quarter appropriations were earmarked for new plant, the balance for new machinery and equipment. Two industries — electrical machinery and fabricated metals — increased their plant programs 10 percent or more.

## AHLMA Life Membership Awarded to W. W. Grant

W. W. "Pete" Grant, who recently retired as manager of marketing research for the Electric Appliance Divisions of Westinghouse, has been elected an honorary lifetime member of the American Home Laundry Manufacturers' Association.

Grant was a key figure and pioneer in the establishment and organization of the industry's Market Research committee. He has been instrumental in developing home laundry appliance statistics into an important management tool.

## Seeburg Acquires New Unit

The Seeburg Corp. has acquired the upright visual bottle vendors division of Brewer-Tichener Corp.

Chairman Delbert W. Coleman said, "This transaction, together with the recent purchase of the Choice Vend Corp., rounds out Seeburg's cold drink vending line." Tools and dies are being moved from Brewer-Tichener's Cortland, N. Y. plant to Seeburg's factory in Hartford, Conn. First production from the new acquisition is scheduled for August 1.

The company also disclosed that arrangements have been completed for Seeburg to manufacture electrostatic copying machines for American Photocopy Equipment Co. The machines will be produced and assembled at Seeburg's Chicago plant.

*(MPM editors are preparing a comprehensive feature on Seeburg's manufacturing operations for a coming issue.)*

## Armco Expands Plant

Armco Steel Corp. has announced the largest modernization and rebuilding program ever to be undertaken at the Hamilton, Ohio, plant. Total cost of all the projects in the program will be more than $6 million. Major projects now underway include the dismantling and rebuilding of coke oven battery No. 1 and relining No. 2 blast furnace.

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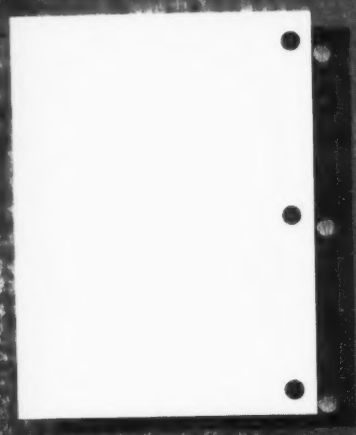
# Ferro ONE-COAT Porcelain enamels

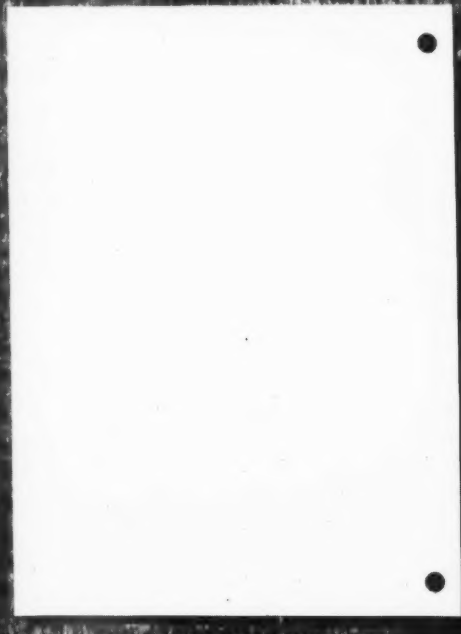
## for "special" and non-premium steels

SPECIAL STEEL "A" (Armco Steel)

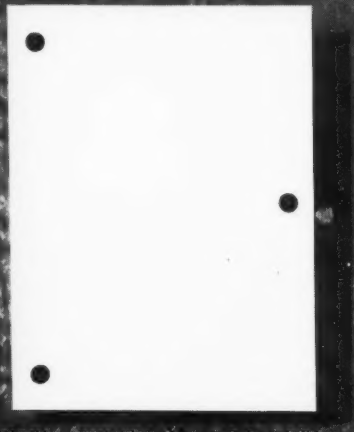


SPECIAL STEEL "D" (U. S. Steel)

SPECIAL STEEL "B" (Bethlehem Steel)



REGULAR COLD-ROLLED, RIMMED STEEL



SPECIAL STEEL "E" (Jones & Laughlin)

# *What is Best for your products?*

**See and compare** the fine *one-coat* porcelain enamel finishes developed by Ferro over the past ten years. They may be used with a variety of steels, as shown above, each of which has been thoroughly tested if not already in commercial production. While processing techniques may differ, any one of these steels can be used to obtain a high-quality porcelain enamel finish with *one-coat* at substantial savings.

Ferro's most recent process, widely publicized in recent months, makes possible the use of *non-premium* steels for these superior one-coat finishes. This, of course, means lower material costs and wider sources of steel supply.

Whichever base metal *you* may select, you will find Ferro's experience and production-proved products extremely valuable in adapting *one-coat* porcelain enamels to your products, your production facilities. When can we talk to you about it?

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## National Rejectors' Currency Changer Exhibited at Patent Show

*A currency changer developed by National Rejectors, Inc., created interest in Washington, D. C., recently at the opening of the Patent Bureau's annual mechanical exhibit in the Department of Commerce. Government and company officials are shown here examining the changer, which accepts $1 and $5 bills, while rejecting counterfeits and foreign currency, and returns silver for the one's and silver and four one's for the fives. National Rejectors is the first firm in the automatic vending industry to take part in the show.*

### Distributing Branch Moved

The headquarters of Westinghouse Appliance Sales, the factory-owned major appliance distributing arm of Westinghouse, has moved to Columbus from Pittsburgh. The move locates the distribution headquarters on the same premises as the Columbus Supply Depot and the major appliance plant in Columbus.

Heading the group relocating in Columbus will be L. G. Berger, manager, field sales. Others on Berger's staff include W. A. Douglass, manager, independent distributor sales; L. W. Newby, general sales promotion and training; W. D. Caldwell, general credit manager; K. B. Froehlich, general service manager; and R. E. Nowels, operations manager.

The company has independent distributors in 26 markets, and the balance of the nation is served by WAS.

### Barber-Colman to Expand

Barber-Colman Co., Rockford, Ill., will expand facilities to increase the present plant area by approximately 170,000 sq. ft. According to the company, the expansion is necessary to "meet increasing demands for our automatic controls, air distribution products, overhead doors, and industrial instruments."

### Jarvis Named Exposition Head

H. T. Jarvis, president of Recold Corp., has been named chairman of the 12th Exposition committee of the Air-Conditioning and Refrigeration Institute. The exposition will be held February 12-15, 1962, at the Great Western Exhibit Center in Los Angeles.

The show is expected to stress the growing importance of the West Coast market for refrigeration and air conditioning equipment.

### Avoncraft Holds Sales Meeting

A three-day seminar conducted recently by the Avoncraft Div., Avondale Marine Ways, Inc., at its New Orleans plant, covered numerous aspects of porcelain enameled package building construction, marketing and design. The meeting was attended by Avoncraft representatives of 29 states and Puerto Rico.

### Shelton Names Distributors

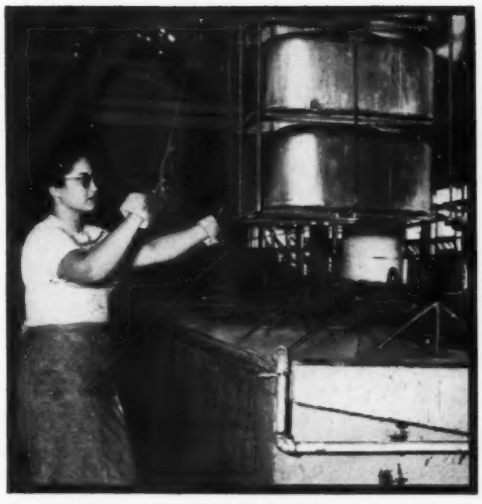
A total of 28 distributors in 19 states have been appointed by Shelton Metal Products Corp. to handle sales of Selectronair, an air-purifying instrument.

Selectronair was introduced last winter in Connecticut hospitals. The unit is designed specifically to help give relief

HST

# NEW NEW

CST



*Even in hard water, these washer tubs emerge sparkling clean and bright . . . thanks to Houghton's new CERFA-KLEEN HST, one of two new Cerfa-Kleens designed specifically for faster and more efficient soak tank and mechanical cleaning operations.*

# Cerfa-Kleen

## METAL CLEANERS

### for *soak tanks—hot or cold*

Whether you use power washers, soak tanks, or mechanical cleaning processes, there's a brand new Cerfa-Kleen to (1) clean faster and better (2) to be job-tailored easier and safer to use, and (3) to give you EXTRA benefits such as built-in rust preventives, water softeners, non-foaming and free rinsing characteristics when you want them. Best yet, you don't have to pay a high price for special formulations when there's a new Cerfa-Kleen to handle most cleaning jobs.

**For Hot Tank Cleaning**

Developed especially to meet the demand for a more powerful, faster immersion cleaner that works even in hard water. Cerfa-Kleen HPW provides high detergency, far above that of ordinary cleaners, for reserve cleaning power and free rinsing. A built-in water softener holds hard water constituents in solution and prevents precipitation on the work or in the rinse tank. Like all Cerfa-Kleens, HPW is non-caking, non-dusting, free-flowing, contains no free caustic. Recommended for all hot immersion cleaning and for tumbling operations where high sudsing is desirable for cushioning. Non-staining and non-corrosive on aluminum, copper and brass.

**For Cold (room temp.) Tank, Dip and Wipe-Off Cleaning**

A versatile and economical liquid cleaner that replaces flammable and toxic solvents. Works effectively at room temperature and saves heating costs. Highly concentrated. (Even dilute solutions of Cerfa-Kleen CST are efficient for dip or wipe-off cleaning.) May also be used to supplement alkaline soak tank cleaners. Contains no free caustic, no objectionable odor, and is non-toxic.

For details about Houghton's new Cerfa-Kleens or our full range of industrial metal cleaners, call your Houghton Man today, or write: E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

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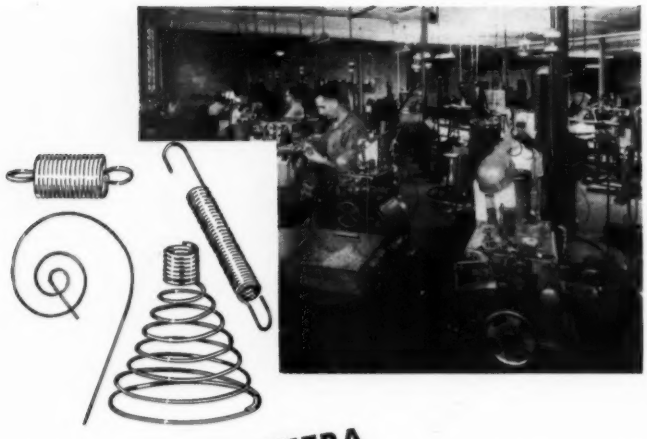

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The care . . . the attention to every detail . . . the constant inspection of every operation . . . these are the little "extra" things that count . . . so much . . . at Stanley Spring Manufacturing Company.

These are the little things that make yours a better product.

Here, Stanley's Automatic Coiling department works constantly to improve and increase production of all types of compression and extension springs.

Through vigilant and continuous research Stanley brings you the finest in all types of springs, wire forms and metal stamping.

DOC TUFFY TO THE RESCUE
WELDING ENGINEER
DOC! I'VE GOT A MILLION JOBS TO DO! JUST CAN'T GET TO THOSE RESISTANCE WELDING SPECIALS!
YOUR PROBLEM HAS A SIMPLE, PRACTICAL SOLUTION... CALL A TUFFALOY SPECIALIST!
Why burden your staff with the puzzles of resistance welding electrode design? Free up your engineers for the bigger, more pressing jobs.
Call in the Tuffaloy expert. He'll give you practical, money-saving electrode designs. Write or call your local Airco or Tuffaloy office. Today.
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Air Reduction Pacific Company • Air Reduction Canada Limited

to allergy sufferers. It is being distributed through surgical supply companies as well as those handling electrical appliances.

## Machinery Show Date Set

Numerous imported machines will vie with the finest in American-made equipment at the International Coliseum Machinery Show, Chicago, September 7-15.

Machines to be shown will include those of France, Italy, England, West Germany, Belgium, Japan and Canada.

## West Coast GAES Holds Last 1959-60 Meeting

Officers were elected for the coming year at the last 1959-60 meeting of the West Coast Chapter of the Gas Appliance Engineers Society. The new officers are: Waldren Kennedy, Charles Koch Associates, president; Lambert Craemer, Robertshaw-Fulton Controls, vice president; Elwood Fairchild, consulting engineer, secretary; Leo Block, Waste King Universal, treasurer; and Ed Cowan, Solarflow Co., three-year trustee.

John Mueller of the Day & Night Corp. was presented a $100 award for his paper, "Flue Gas Analysis." His paper was selected as best in the "best technical paper" contest conducted by the National Chapter.

*John Mueller of Day & Night Corp. receives a $100 check for winning the "best technical paper" contest conducted by the National Chapter of GAES. National Chapter President Mike Caparone made the presentation at the recent meeting of the West Coast Chapter.*

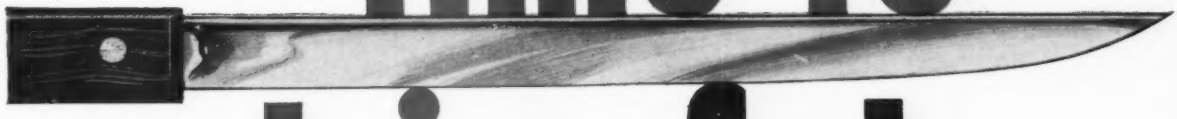
## "Total Systems" Control Announced by IBM

Control of manufacturing cycle functions, from raw material to finished product, can now be combined into a single operating system through the medium of data processing, according to an announcement by International Business Machines Corp.'s Data Processing Div.

According to the company, the Man-

to Page 97 →

# good time to trim fat



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● Our long time experience in *producing AND using* Frits gives us a practical "Know-How" that has enabled our Frit customers to *Trim The Fat* in their enameling costs.

Old man 'practical experience' is a hard guy to whip. Here at Ing-Rich top flight ceramic engineers have to prove their case under actual production conditions to our enameling plant technicians.

Ing-Rich has enjoyed a high quality reputation in the enameling field over a long period of years. In our large enameling plant where we both enamel our own products and do a very large job enameling volume we are just as interested in trimming the fat as you are . . . and the 'prove your case' situation, we have at Ing-Rich produces Frits which are giving us, and our Frit customers, better enameling results at lower costs.

The combination of Ing-Rich plant tested Frits and Ing-Rich practical enameling technicians might be able to help you *Trim The Fat.*

*Pioneer Producer of*
LIFETIME
*Porcelain Enamel Products*

**INGRAM-RICHARDSON, INC.**

OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

ING-RICH
FRIT
"The Plant Tested Frit"

## personals

**Robert B. Ryan,** former vice president of the **McLaughlin Co.,** has been elevated to the chief executive position of president. **Robert D. Martin,** former secretary-treasurer, has stepped up to vice president. Ryan has been with the company 10 years in various sales capacities, and Martin has served eight years in various administrative posts.

**Richard S. Burke** has been elected president and director of the **Geo. D. Roper Corp.,** it has been announced by Stanley H. Hobson, chairman of the board. The latter, who has been both chairman of the board and president, will continue as board chairman and will play an active role in company management.

**Paul I. Granquist** has been appointed head of the newly opened Chicago area office of **Ferro Powdered Metals, Inc.** The office, located at 9500 W. Ogden Ave., Brookfield, Ill., is intended to speed engineering service to users in the northern Illinois and Wisconsin area.

RYAN

NEUMANN

GALL

WARFORD

**W. C. "Bill" Neumann** has joined **Midwest Metallic Products, Inc.,** Cleveland, Ohio, as general manager. The company specializes in the contract manufacture of wire products for industry. Neumann will headquarter at the company's new plant in Cleveland.

Until July 1, 1960 Neumann was general sales manager of Union Steel Products Co., Albion, Mich., where he has been associated for fifteen years. He has been quite active in major appliance industries, hardware and housewares fields, as well as in materials handling associations.

**John R. Perkins** has been appointed sales manager of series motors of **The General Industries Co.,** Elyria, Ohio. Perkins has been vice president in charge of sales of the McDowell Co. before joining General Industries.

**Frank A. Gall** has been appointed Illinois district manager by **Macco Products Co.,** Chicago. Gall will cover all of Illinois with the exception of the Chicago metropolitan area and the Tri-Cities. Gall's experience includes 15 years as a shop superintendent and seven years as a factory manager, working in the fields of fabrication and forming, tools and dies, and cleaning and plating.

Macco also announced the appointment of **Arthur A. Warford** to the newly created position of manager, customer service. He joined Swan-Finch Oil Corp. in 1937 and served in various capacities until he became vice president and technical director in 1956. From 1957 to 1960 he served as a consultant, plant manager and chief chemist for Core-Lube., Inc., before joining Macco.

**Robert B. Starnes** has been named president of **The Mathes Co.,** a division of the **Glen Alden Corp.,** succeeding Benjamin R. Ebersman, who will continue his duties as a vice president of the parent company. Starnes joined Mathes in 1947 as a salesman, and since 1958 he has served as general sales manager and vice president. In other Mathes appointments, **Claude Birdsell** has been named sales manager, and **Sam Chambers** becomes assistant to the sales manager.

STARNES

BURKE

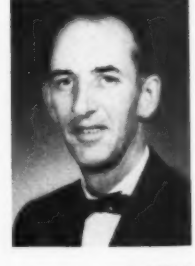
**George F. Rhonehouse,** formerly plant manager of the **Marsco Mfg. Co.,** has been named vice president in charge of manufacturing, research and development.

**Edward Kaufholz** has been named director of sales for the **Control Switch Div., Controls Co. of America.** The firm

PERKINS

RHONEHOUSE

GRANQUIST



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without this?
SPRAYING SYSTEMS
Spray Nozzles
COMPLETELY DESCRIBED AND ILLUSTRATED IN CATALOG 24—WRITE FOR YOUR COPY
The most comprehensive spray nozzle catalog ever printed. Thousands of designs and sizes . . . unequalled choice of capacities, characteristics and materials. The result of over twenty-five years of specialized research, design and manufacturing.
SPRAYING SYSTEMS CO.
3203 A RANDOLPH STREET • BELLWOOD, ILLINOIS
ADVANCED DESIGN • GREATER PRODUCT CHOICE • PROMPT SERVICE

The more crimping you have to do, the more satisfied you will be with Weirkote Zinc-Coated Steel. There's no peeling, no chipping, no flaking. Work it to the limits of the steel base itself and the zinc coating remains intact assuring you of the complete corrosion protection that only zinc can give. Weirkote is made that way—to retain its protective zinc coating no matter how tough the forming and bending operations. A Weirton representative will gladly supply full information on Weirkote—another fine product of the Weirton Steel Company, Weirton, West Virginia.

**WEIRTON STEEL**
*Weirton, West Virginia*

WEIRTON STEEL COMPANY

*Weirton Steel is a division of* **NATIONAL STEEL CORPORATION**

*Weirkote will also be available in 1961 from National's Midwest Steel Division, Portage, Indiana.*

also announced the appointment of **George Ballee** as the sales manager of the Control Switch Div. Kaufholz was formerly vice president of sales for Hetherington, Inc., a Controls Co. subsidiary until it was combined earlier this year with Electrosnap Corp. to form the Control Switch Div. Ballee was formerly vice president of sales with Electrosnap.

**Waste King Corp.,** Los Angeles, has promoted four men to managerial positions in the appliance engineering department, according to A. M. Anderson, vice president, appliance engineering. They are: **T. T. Woodson,** dishwasher engineering; **George A. Martinek,** disposer engineering; **Leo Block,** engineering services; and **Richard M. Scherer,** engineering evaluation.

**William R. Steele** is now associated with **Roberts Brass Co.,** Mitchell, Ind., as sales representative for Delaware, Maryland, Virginia and eastern Pennsylvania, with headquarters in Philadelphia. Steele was formerly associated with Robertshaw Thermostat Co. as a field representative.

**W. H. Schermer** is now sales manager of the appliance products department for **Union Steel Products Co.,** Albion, Mich. Schermer has been with Union Steel Products six and one-half years; he has been sales manager of the materials handling department.

**Horace B. Glover** has been appointed vice president, sales, of the **Howard Refrigerator Co., Inc.** He has been with the firm for six years.

**William Hoeltke** has been named sales manager of **Ariens Co.,** manufacturers of rotary tillers and riding mowers. The former sales manager, **Mando S. Ariens,** becomes director of sales.

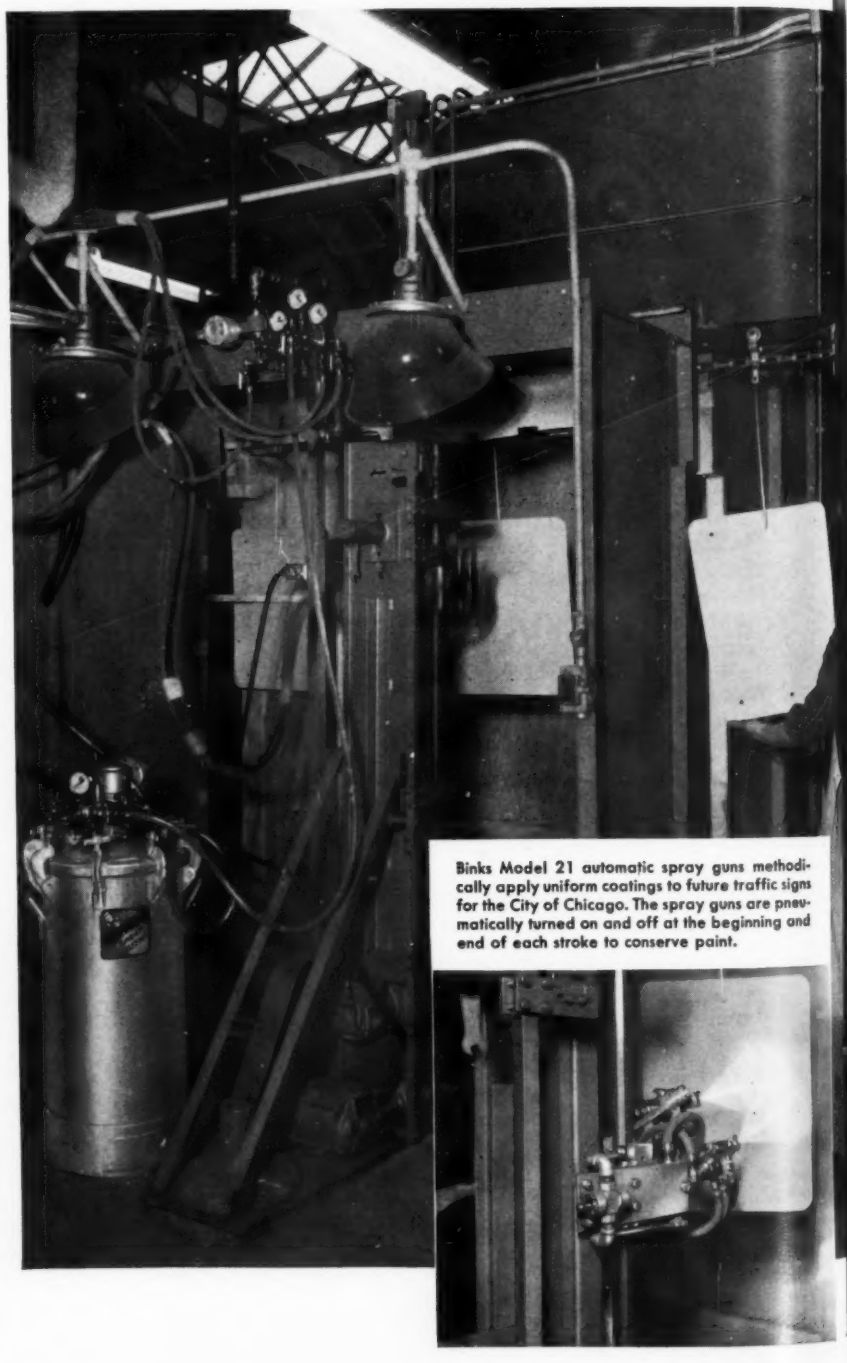
**Edgar P. Christian** has been named sales manager for **Leonard and ABC** appliances maufactured by the **Kelvinator Div., American Motors Corp.** He fills the post recently vacated by Glen Franks.

**Ralph R. Mendelson** has been appointed executive vice president of the **Hotstream Heater Co.** He has served in various administrative capacities with the company for 20 years.

**Dr. John S. Burlew** has been appointed director of research and **Dr. Dewey J. Sandell** has been appointed director of development for the **Research & Development Div. of Carrier Corp.**

**Edward W. Ruhe** has been promoted to the newly created position of chief engineer of the engineering and maintenance department of **Olin Mathieson Chemical Corp.'s Metals Div.** plant at East Alton, Ill. In his new position he will be responsible for all mechanical engineering and maintenance functions for brass strip, Roll-Bond, and fabrication operations. The company also announced the appointment of **Charles O. Kunz** as Roll-Bond manager. He was previously sales engineer for the St. Louis territory.

**M. F. Grace** has assumed new duties as product sales manager, central heating controls, for the **Grayson Div.** of **Robertshaw-Fulton Controls Co.** He joined Grayson as a sales representative in 1947. Robertshaw also announced the appointment of **Arthur G. Baitz** to the new post of director of engineering planning. He has served the firm since 1951.



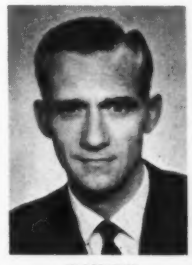
Binks Model 21 automatic spray guns methodically apply uniform coatings to future traffic signs for the City of Chicago. The spray guns are pneumatically turned on and off at the beginning and end of each stroke to conserve paint.

**Graham S. McCloy** has been named manager of engineering for the major appliance division of **Westinghouse Electric Corp.** The move is part of a plan to centralize the firm's engineering in both the Mansfield and Columbus, Ohio, plants. Reporting to McCloy will be **W. A. Johnston,** manager of engineering for Mansfield products, and **R. H. Tull,** manager of engineering for Columbus products. Westinghouse also appointed **H. W. Rainey, Jr.,** marketing manager of the **Sturtevant Div.** Previously, he held the position of general sales manager.

**Harry J. Hinchliffe** has been elected vice president of **General Industries Co.** In addition to his new duties with the company, he will retain those of general plant manager of the company's Motors Div. Hinchliffe joined General Industries in 1956 as chief industrial engineer.

HINCHLIFFE

CHMIELNICKI



HANSEN

PRESTON

MRS. SHEA

McCLOY

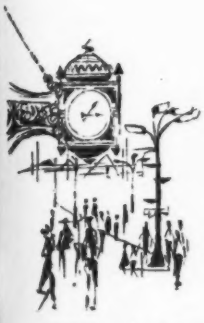
**Mrs. Josephine M. Shea** has been appointed manager of advertising for **Crucible Steel Co. of America.** According to Michael Stumm, director of information service, this is the first time in the history of the steel industry that a woman has served as manager of advertising. Mrs. Shea joined Crucible in 1946 and was named assistant manager of advertising in 1953.

**E. W. Allison** has been elected vice president in charge of all sales and marketing functions of **Detrex Chemical Industries, Inc. G. C. Van de Riet** has been promoted to treasurer, and **F. J. Chmielnicki** becomes secretary and legal counselor.

**Merrill Preston** has joined **Caloric Appliance Corp.** as a product engineer. Before joining Caloric he was associated with the Florence Stove Co. as chief engineer, and with the George D. Roper Corp. as a product engineer.

**Duane G. Hansen** has joined **Lewis Bolt and Nut Co.** to fill the newly created post of merchandising manager. He will be responsible for advertising and sales promotion in the overall merchandising programs of the firm.

*to Page 97* →

**Chicago's Sign Division**

# cuts painting time from 2 days to 1 hour

"With our old equipment and air dry paints, it took us two days to paint a sign. With Binks automatic spraying system and drying ovens, we now do the same job in only 1 hour," states Mr. Don R. Crowell, City of Chicago Traffic Engineer.

**Quality finish boosts sign life**

Until Binks equipment was installed, many of the 100,000 signs produced each year had to be farmed out. Now all signs are painted in the Sign Division shop. Quality has been improved, too, since sign life is now about six years as against two years when painted by previous manual spray methods.

**Saves time and paint**

Besides a great savings in time, the new Binks system saves money by cutting the amount of paint needed through reduction of overspray. Although present production is 100,000 signs per year, the new Binks system can turn out up to 250,000 signs . . . an ample allowance for future growth needs.

**Free planning service**

If you have a spray finishing problem, it will pay you to consult a Binks spray finishing engineer. He will show you how a Binks integrated spray system can speed up finishing and give you better quality at lower cost. For an appointment call your nearest Binks office or write direct.

**Ask for Bulletin 975 . . . describes spray finishing equipment, methods and systems.**

***Ask about our spray painting school***
***Open to all...NO TUITION...covers all phases***

**Binks**
*EVERYTHING FOR SPRAY PAINTING*

SPRAY GUNS

AIR COMPRESSORS

NATIONWIDE SERVICE

**Binks Manufacturing Company**
**3122-40 Carroll Ave., Chicago 12, Ill.**

0570

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

**The Interlox line was developed to give you a better, lower cost, easily controlled phosphate coating. Its exceptional cleaning ability combined with a radically different type of accelerator produces an even, fine grained, dense coating which locks your organic finish to the metal.**

**Interlox eliminates streaks, stains, powdery deposits, and flash rusting, giving you the ultimate in appearance, adhesion and resistance to humidity and salt-spray.**

**Additional cleaning power is easily obtained, when desired, by the addition of a low-cost detergent only, thus avoiding the danger of over-phosphatizing and the costly practice of adding complete phosphatizing compound when only cleaner is required.**

**There is an Interlox product developed to meet your particular need whether spray or immersion type, single or multiple stage. Interlox baths are unusually long lived and require less additions and control.**

*Licensed Manufacturers*

**Alert Supply Co. Los Angeles, California**

**Armalite Company, Ltd. Toronto, Canada**

**NORTHWEST CHEMICAL COMPANY**

9310 ROSELAWN DETROIT 4, MICHIGAN

# MPM

**new industrial literature**

## Aluminum Buyers' Guide

Facts on aluminum coil, sheet, plate, tubing, pipe, rod and bar stock available from stock are contained in an aluminum buyers' guide. Also covered are federal specifications, analyses, mechanical properties, tolerances, machinability ratings, finishes, corrosion resistance and relative costs of aluminum alloys. For a copy of Technical Bulletin 30-1, write Dept. MPM, Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.

## Pocket Welding Guide

"Vest Pocket Guide to Better Welds" contains 80 pages of arc welding information. The booklet gives information of five essentials for proper welding procedures, examples of good and bad welds, welding positions, operator qualifications, welding metals, steel available for welding, causes and cures of common welding troubles, and other helpful information. Write Dept. MPM, Hobart Brothers Co., Troy, Ohio.

## Rotoforming Bulletin

Rotoforming, a new method whereby cold metal is pressure-shaped into desired thicknesses and circular shapes, is fully explained in Bulletin 500-P4. A description of the machine, various shapes that can be formed, range of possible sizes, types of finishes, and the metals and alloys best suited for rotoforming are included in the bulletin. Write Dept. MPM, Commercial Shearing & Stamping Co., 1775 Logan Ave., Youngstown 1, Ohio.

## Press Bulletin

Bulletins on moving bolsters and bottom-drive presses were recently made available. The bulletin on bottom-drive presses describes how, with the use of these presses, the main floor is cleared for better material handling, increased safety and improved appearance, and how the lower level simplifies scrap removal and equipment maintenance. Write Dept. MPM, Clearing Div., U. S. Industries, Inc., 6499 W. 65th St., Chicago 38, Ill.

## Mirro-Brite Mylar

Mirro-Brite Mylar, a pressure-sensitive material for decorative trim or panels, is described in a new brochure. The brochure lists the 26 embossed designs available in six metallic colors, with or without pressure-sensitive adhesive backing. The material is available in continuous rolls, cut-to-size sheets, die-cuts, or in widths as narrow as one-half inch. Write Dept. MPM, Coating Products, Inc., 101 W. Forest Ave., Englewood, N. J.

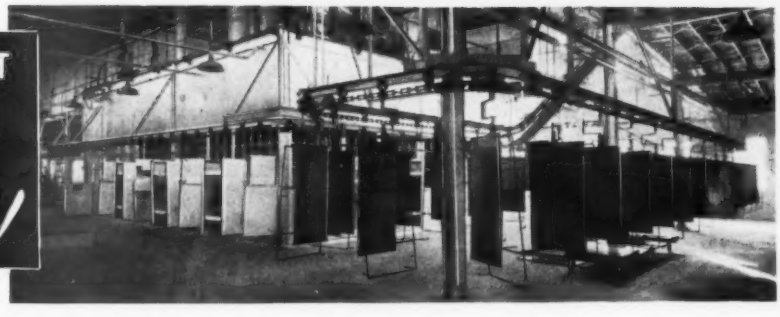
## Adhesive Brochure

"Custom Formulated Adhesive for Industry" describes a line of contact cements for many industry applications. Variations of eight basic formulations provide working properties to meet most plant conditions and end uses. Write Dept. MP-7, Interchemical Corp., 224 McWhorter St., Newark 5, N. J.

## Paint Strippers

A complete line of strippers, including hot alkaline, cold solvent, and flush-off types are covered in a Stripper Selection Chart. Among the considerations described as important in selecting the right stripper are thick-


IF WE HAVEN'T MET
*Let's Get Acquainted!*



For forty three years we have been designing and building complete paint finishing systems and allied equipment for hundreds of prominent and progressive manufacturers.

We welcome your invitation to have our representatives discuss your problems and submit layouts and quotations.

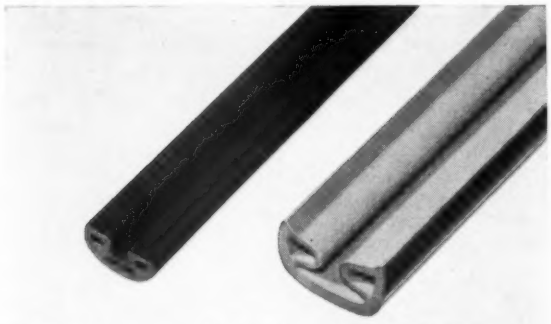
No obligation, of course.

**OVENS • WASHERS • PAINTING EQUIPMENT**
**AIR MAKE-UP SYSTEMS • CONVEYORS**
**QUALITY AUTOMATED SYSTEMS**

*Bulletin G-1 illustrates our activities. — Sent on request.*

DRY-SYS Equipments CHICAGO
**DRYING SYSTEMS CO.**
ENGINEERS • MANUFACTURERS • CONTRACTORS

**DIVISION OF THOR POWER TOOL CO.**
**1806 FOSTER AVE. • CHICAGO 40, ILL. • Phone ARdmore 1-9100**



No matter what shape they're in...

CIPCO

(A DIVISION OF ESSEX WIRE CORPORATION)

produces high quality extruded plastic components for appliances, in quantity . . . competitively priced.

- **Control of Chemical Compounding**
  CIPCO formulates their own compounds (the first plant in the industry to do so) thus increasing the finished products capacity to resist aging.
- **Volume Production**
  Banks of extruders and years of production know-how guarantee on-time delivery of a quality component.
- **Engineering Experience**
  Vast experience in the development of seal, vibration dampening gaskets and other plastic applications is available to help formulate an extrusion tailored to your application.

*Write, wire or call for complete information and samples.*

CAROLINA INDUSTRIAL PLASTICS
DIVISION ESSEX WIRE CORPORATION
Mt. Airy, North Carolina

ness of paint, base metal, cycling time, safety rules and method of handling. Write Dept. MPM L. R. Kerns Co., 2659 E. 95th St., Chicago 17, Ill.

## Cleaning and Phosphating

CrysCoat 187, a formula that is said to clean and phosphate in one dip-tank operation, is described in a recently issued bulletin. According to the bulletin, the formula cleans and phosphates soiled parts in three to 10 minutes. Write Dept. MPM, Oakite Products, Inc., 17 Rector St. New York 6, N. Y.

## Spray Nozzle Catalog

A recently issued spray nozzle catalog describes and illustrates thousands of designs and sizes, and a wide variety of capacities, characteristics and materials from which to choose. To obtain Catalog 24 write Dept. MPM, Spraying Systems Co., 3203 Randolph St., Bellwood, Ill.

## Model Y Thermostat

Bulletin 568 explains the features and applications of the Model Y thermostat, which can be used as a gas valve, automatic pilot, oven temperature control, and pilot filter. According to the bulletin, simplified construction and the fact that adjustments can be made from the front of the range allow easy servicing. Write Dept. MPM, The Wilcolator Co., 1001 Newark Ave., Elizabeth, N. J.

## Name Plate Bulletin

A technical bulletin describing a full line of die cast name plates and decorative trim is now available. The three-dimensional cut-out letters are available in a variety of finishes and fastening methods. Write Dept. MPM La France Precision Casting Co., 29th & McKean Sts., Philadelphia 45, Pa.

## Armco Stainless Steel

The application of stainless steel in appliances is described in a folder titled "Armco 17." According to the folder, the material resists corrosion, stays attractive, remains strong, and fabricates readily. Write Dept. MPM, Armco Steel Corp., 2220 Curtis St., Middletown, Ohio.

## Vibratory Finishing Machines

A three-color catalog describes and illustrates seven vibratory machines. The brochure also covers a wide variety of "before and after" views of parts finished with the machines. Write Dept MPM, Almco, Queen Products Div., King-Seeley Corp., Albert Lea, Minn.

## Oil Flow Control Valve

A Micro-Cam oil valve designed for precision control of oil flow to any type burner is described in a new brochure. The brochure provides information on how the Micro-Cam valve can be used to improve operation of oil-fired heat processing equipment. For a copy of Data Sheet No. GA704FC, write Dept. MPM, Hauck Mfg. Co., 124-136 Tenth St., Brooklyn 15, N. Y.

## ASTM Proceedings

The American Society for Testing Materials has announced the publication of its 1959 ASTM *Proceedings*,

Volume 59. This 1424-page volume records the technical accomplishments of the year, including reports and papers offered to the Society during the year. There are 71 reports of technical committees, and 44 technical papers and discussions on a wide variety of subjects pertaining to research and standards for materials. Copies are available for $12 each from ASTM, 1916 Race St., Philadelphia 3, Pa.

## Specialty Coatings

"Coatings Selector" is a guide to a line of specialty coatings available for applications on plastics, glass and wood. The charts, which can be mounted for ready reference, show the uses and characteristics of the company's spray, dip and flow coating materials, vacuum metallizing coatings and standard plastisol formulations. Write Dept. MPM, Bee Chemical Co., Lansing, Ill.

## Clamp Booklet

A new 16-page booklet containing illustrations and condensed information on a line of clamps for hose, flexible plastic pipe and duct connections has been announced. The clamps are designed for use in the appliance industry and other applications. A number of custom-made clamps for unusual applications are also described and illustrated. Write Dept. MPM, Wittek Mfg. Co., 4305-43 W. 24th Place, Chicago 23, Ill.

## AC Motor Catalog

A 56-page catalog contains complete pricing and dimensional data on a line of AC Multi-Shielded motors. Information is included for various modifications, such as specialized mountings and enclosures, as well as the new Sterlicone Multi-Shielded drip-proof motors. Write Dept. MPM, Sterling Electric Motors, Inc., 5401 Telegraph Rd., Los Angeles 22,, Calif.

## Special Fasteners

A data sheet available describes the manufacturers' Cam-Bolt, a special fastener for use where the strength of a bolt is required but where fast opening and closing is desirable. A simple adjustment at the time of installation insures a constant leak-proof seal of any predetermined pressure, thus eliminating the need for a torque wrench to insure uniform closing pressure, according to the manufacturer.

Write Dept. MPM, Simmons Fastener Corp., North Broadway, Albany 1, N. Y.

## Pre-Finished Metals

Important technical information for production men seeking methods to streamline factory procedures by using pre-finished metals instead of piece plating is available in an eight-page discussion report entitled "Fabricating Qualities of Pre-Finished Metals." Effects of various electro-deposits on the fabrication or ductility of sheet and strip are described and illustrated.

The article points out that ductile deposits always tend to improve the depth of the draw of the base, regardless of the thickness of the plate. The author is F. P. Romanoff, technical director of Apollo Metal Works.

Write Dept. MP-3, Apollo Metal Works, Clearing Station, Chicago 38, Ill.

## Poly-V Belt Drives

Design advantages of Poly-V belt drives are outlined in a new four-page engineering service booklet. The booklet outlines specification for Poly-V drives relative to in-operation characteristics of vibration, sheave diameters and speed ratios and features condensed horsepower rating tables. Complete sheave groove dimensions are also listed. To obtain Booklet No. A2343,

*Localized Steel Service Centers can fulfill your steel requirements and eliminate the necessity for inplant inventory, thus releasing your investment in raw material and increasing your working capital.

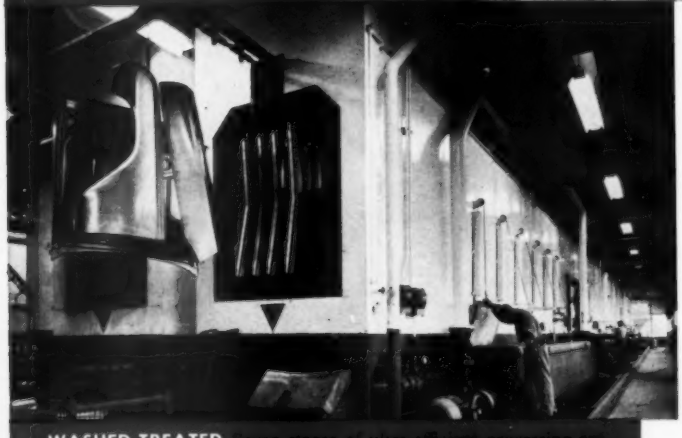
Don't take chances trying to outguess supply and demand. Adequate stocks are maintained in a wide range of types, shapes and sizes. Delivery is *immediate*.

MICROROLD STAINLESS STEEL is regularly carried in stock by many of these independent steel warehouses. Washington Steel is a producer of stainless sheet and strip exclusively, all of which is precision rolled on Sendzimir mills.

WASHINGTON STEEL CORPORATION
7-G WOODLAND AVENUE • WASHINGTON, PENNSYLVANIA

# Herding more body parts down the finish line

Control Center for 2 Despatch flow coat machines and air circulating systems.



WASHED-TREATED Seven stages of ultra-efficient processing are [illegible] metal parts washer rustproofing machine, on auto makers body part assembly line.

FLOW COATED Parts enter one of the Despatch flow coat machines [illegible] from the panelboard shown in top illustration. Drip area for this 40 ft. machine is 560 ft. long.

## Modernization Speeds Production on 1960 Automobile Finishes with DESPATCH SYSTEM

Smoother, long lasting finishes are achieved with reduced labor costs in this recent Despatch installation. This up-to-date finishing system, manufactured and installed for a leading automobile producer, provides . . . better rustproofing . . . smoother more evenly coated application of paint or primer . . . more economical use of finishing materials . . . and reduces direct labor costs by introducing new efficiency and eliminating hand prefinishing operations.

Rarely are two finishing problems identical . . . yours may differ considerably from those faced by this major auto producer. A Despatch analysis of your finishing system can determine what system is best for your product. Despatch experience has been solving the finishing problems of industry since 1902. It will pay you to take advantage of a Despatch finishing analysis in your plant. Write today for new bulletin on Despatch engineered systems for modern finishing of metals.

DESPATCH

**DESPATCH OVEN COMPANY**
611-8th Street S.E.
Minneapolis, Minnesota

write Dept. MPM, Poly-V Drives, Dayton Industrial Products Co., 2001 Janice Ave., Melrose Park, Ill.

### Electron Beam Welding

A 12-page catalog has just been issued on electron beam welding. The brochure covers all of the features of electron beam welding, how the process operates, the principal advantages, and the equipment required. Also included is a schematic drawing of the electron beam gun. Write Dept. MPM, Air Reduction Sales Co., 150 E. 42nd St., New York 17, N. Y.

### Air Press Bulletin

A new line of single-acting air presses is fully described and illustrated in a recently published four-page bulletin. Consisting of 28 models, the new line is built around four basic press sizes ranging from ½ to 2-ton capacities at 85 psi. To obtain Bulletin 85, write Dept. MPM, Niagara Machine & Tool Works, 683 Northland Ave., Buffalo 11, N. Y.

### Mechanical Deburring

A four-page folder detailing four methods of mechanical deburring is now available. The literature describes and diagrams the methods, and gives numerous examples of their application. Illustrations and text show the various types of equipment available for the deburring processes to remove burrs or flash from machined parts, stampings, die castings, powdered metal parts, etc. Write Dept. MPM, Wheelabrator Corp., 1143 S. Byrkit St., Mishawaka, Ind., and ask for Mechanical Deburring News.

### Portable pH Meter

A technical bulletin on a line-operated portable pH meter is now available. The Electron pH meter features a drift-free, constant-reading meter, and a single electrode. Standardization once a week or less is said to afford precise, reproducible pH readings. For a copy of the bulletin write Dept. MPM, Sel-Rex Corp., Nutley, N. J.

### Poly-Plate Bulletin

A new bulletin titled "New Dimensions in Nameplate Design" explains a new type of nameplate that identifies the product and also serves a decorative and protective purpose. The nameplates combine sub-surface printing and metalizing with the protective qualities of Mylar. The bulletin, with samples of Poly-Plates, can be obtained by writing W. H. Brady Co., Dept. MPM-161, 727 Glendale Ave., Milwaukee 9, Wis.

## Personals

→ *from Page 91*

**Edgar E. Malin** and **John H. Collins** have been appointed general sales manager and district sales manager, respectively, of **DeSoto Chemical Coatings, Inc., Pacific Div.** Malin joined the organization in 1953 as district sales manager, and Collins joined DeSoto's Berkeley, Calif., office in 1955 as an industrial sales representative.

**Curtis R. Hammond** has been appointed to the newly created post of director of commercial sales development for **Raytheon Co.** During the past year he has served as director of regional commercial administration.

**Edward S. Cronell, Jr.,** a former vice president of the American Radiator Co., has been named director of research and development for the **Shelton Metal Products Corp.** In his new position, he will do research and development on new products for the medical field.

**J. H. Jordan,** formerly assistant to the president of **Iron Fireman Mfg. Co.,** has been elected vice president and manager of the company's Heating & Cooling Div. He joined the company in 1958.

**Jacob Miller** has been named vice president of **Sylvania Electric Products, Inc.** He will handle the company's national sales, supervising district sales managers, and assuming responsibility for field sales of television sets, radios and stereophonic high fidelity phonographs.

**Alexander Wilson** has been appointed to the position of assistant regional manager for **Parker Rust Proof Co.'s** western regional office in Chicago.

**J. O. Ross Div. of Midland-Ross Corp.** has announced five promotions. **Robert W. Grott,** currently district manager of the Seattle office, becomes assistant chief engineer. **Paul Goldner** replaces Grott, and **George Schuning,** formerly a sales engineer in the Ross Chicago office, becomes district manager of the Boston office. **Dave Alexander,** sales engineer in the Boston office, is assigned to paper mill sales territories in the New York office, and **Ken Jones** becomes district sales manager of paper mill sales in the New York office.

**Gordon A. McAlpine** has been appointed market manager, industrial and automation products, of the **Radio Corporation of America.** He has been associated with the Industrial Sales Div. of Ex-Cell-O Corp. for the past 13 years.

## Industry News

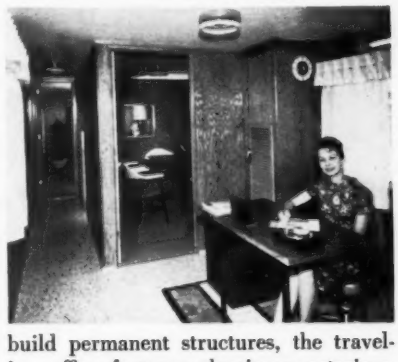
→ *from Page 86*

agement Operating System (MOS) can be fully activated by a customer order in punched card form to carry out the six interrelated functions which are basic throughout the manufacturing industry. These are sales forecasting, materials planning, inventory management, plant scheduling, work dispatching and operations evaluation.

In its ultimate form, the company says, MOS will control the planned production cycle from start to finish without human intervention — except for optional management decisions entered at the most economical and convenient time.

### Trailer Office Introduced

The first mass-produced office on wheels was recently introduced by Vagabond Coach Co., New Hudson, Mich. Designed to bring complete and efficient office space and business facilities to areas where it is impractical to



build permanent structures, the traveling office features aluminum exteriors, interior oak paneling, radiant floor heating, separate offices and reception room.

Vagabond feels sales of the units will be more than 200 annually to meet needs of firms engaged in construction, banking, real estate, used cars and other services and products.

### Paint Show Date Set

The 38th Annual Meeting of the Federation of Societies for Paint Technology and the 25th Paint Industries Show will be held October 29 through November 2 at the Sherman Hotel, Chicago.

The Annual Meeting of the National Paint, Varnish and Lacquer Association will be held at the Drake Hotel in Chicago, October 27-29.

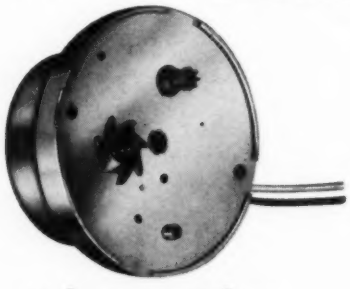
Included in the annual meeting program will be the Joesph J. Mattiello Memorial Lecture, panel discussions, Constituent Society technical papers, and research and educational reports.

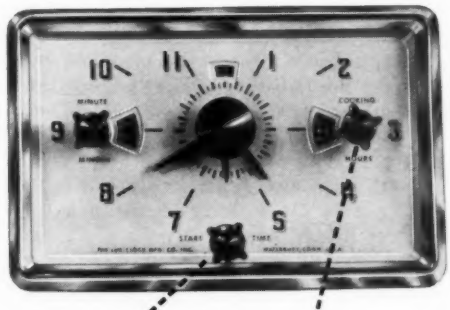
## *Want to know what makes LUX the top appliance timer?*

# IT'S SO SERVICE-FREE

When an appliance timer is already function-perfect, fashion-right, and unbelievably simple to operate, there's just one thing that can add to its superiority—long-term service-free performance . . . and Lux really has it!

The lube-less motor bearings used in every Lux Timer never need lubrication, thereby preventing formation of heat-caused gummy residues, the most common reason for timer motor failure. The precisely engineered Lux Timer has a history of giving manufacturers and dealers no post-sale grief in repeated service calls that cost time, money, and reputation.





SET TIME TO START COOKING

SET HOURS TO COOK

## so simple and so precise . . .

Lux's 2-step simple setting is so easy . . . on the range timer, for example, simply set time to start cooking and then set number of hours to cook. The precision-minded Lux Timer automatically shuts off at the exact, cooked-to-perfection instant.

Sell the appliance that's equipped with a Lux Timer, the built-in extra effort needed in today's competition.

LUX Time

YOUR TIME-REMINDER LINE

*LUX . . . first . . . for lasting TIME*

DEPARTMENT MPM

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## New P. E. products

→ *from Page 72*

side of their mufflers, and some coated steel in critical internal areas. As expected, the paint life varies with quality and the ingredients used. Sooner or later, exposed metal becomes corroded and the appearance of the muffler is somewhat less attractive than the designer's or stylist's original concept.

Tractor manufacturers are extremely sensitive to appearance and styling. They make concentrated efforts to produce an attractive unit, consistent with its function and performance. Yet the exposed muffler continues to be a source of irritation.

For most tractors which we are now studying, the muffler is mounted vertically, thereby eliminating the automotive muffler problem of condensation accumulation. However, temperature and weather continue to be factors. Also, we must add one more factor which is ideally handled by porcelain enamel, and that is appearance. Not only can we retard corrosion to an insignificant rate, but we also can contribute *color*, either matching or contrasting. No other known material has the high performance characteristic possessed by porcelain enamel for this application.

When the permanent appearance of a material depends upon its resistance to heat, thermal shock, corrosion and weatherability, and still provide a decorative finish through a wide range of color, we can specify porcelain enamel with confidence.

In these comments, I have mentioned or inferred the following characteristics: Color Permanence—Surface Texture—Hardness—Impact Resistance—Thickness Control — Cleanability — Stiffening — Resistance to Acids — Impermeability — Weathering Resistance — Salt-Spray Resistance — Variable Co-efficients of Expansion — Resistance to Corrosion and Oxidation—Thermal Stability — Thermal Shock Resistance — Dielectric Strength — Adjustable Dielectric Constant.

I am satisfied that porcelain enamel has sufficient versatility to capture markets not only completely "new" in concept, but also some of those we discarded long ago.

---

EDITOR'S NOTE: As this statement by Mr. Pierce was readied for publication, announcement was made by American Motors Corp. that all models of its 1961 Ramblers will be equipped with porcelain enameled mufflers and tailpipes. The "ceramic system" to be used was developed jointly by AMC, Walker Mfg. Co., Racine, Wis., and Bettinger Corp., Milford, Mass. *(See "The decade ahead for ceramic coatings," Page 48, March, 1960 MPM.)*

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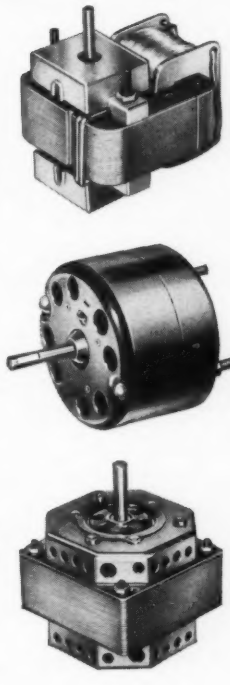
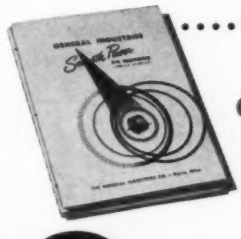
The unexcelled performance of GI motors together with the unusually low sound level means extra care and control in every step of design and manufacturing — and extra dependability in day-in, day-out operation. That's why, for 40 years, the great names in industry have preferred to rest their reputation on GI motors. GI produces a "Smooth Power" motor for every sub-fractional hp requirement — including yours. Write today for complete full-line catalog.





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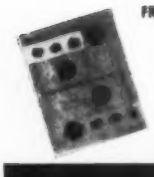

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safe transit

**editorial voice of the national safe transit program**

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**Devoted to improving packaging shipping, and materials handling methods for the appliance and metal products manufacturing industries. This section contains information on plant experience and industry advances for improving packaging and shipping methods, and prevention of in-transit loss. It also contains information on the National Safe Transit Committee's preshipment testing program and reports on NST activities.**

## Literature Describes New Heavy Duty Truck

Literature describing The Raymond Corp.'s new single wheel drive heavy duty truck is now available. Designed for narrow aisle operation, the new model features an exclusive motor wheel drive balanced by an offset caster wheel. The truck is powered by a 24 volt industrial battery and is available in "Reach Fork" or straddle base fork models. Full specifications are listed in the literature.

For Bulletin 621, write to The Raymond Corp., 260-181 Madison St., Greene, N. Y.

## Spector Receives Award

Spector Freight System, Inc., Chicago, recently received the 1960 Material Handling Award of the Society of Advanced Management, it has been announced.

The award was made to W. Stanhaus, president of the motor freight carrier at a luncheon at the Statler Hotel, New York. The society cited Spector's work in freight containerization, mechanization of terminal handling methods, and double bottom and the relay operations.

## Wins Merit Award for Package

For their contribution of a new idea in the packaging of fasteners, Parker-Kalon, a division of General American Transportation Corp., Clifton, N. J., has won a merit award by the Folding Paper Box Association of America.

Selected at the annual Folding Carton Competition as "an outstanding example of progressive packaging," the new package, called "Grand-Pak," was designed by the Packaging Committee of Parker-Kalon, with art direction by Gerard Cafone in conjunction with Federal Carton Corp., North Bergen, N. J., who produced the entire line of cartons.

## Container Latch

A new heavy duty container latch for rugged service, designated 37L, is being developed by Camloc Fastener Corp., Paramus, N. J., for use on reusable containers, transit cases, and large assemblies of components. The latch has an ultimate tension and shear strength of 4500 pounds.

Two models are available, both having the same strength but differing in

size. The latch has only five parts, and the unit is "fused" for pin-shearing on overload, in order to prevent damage to major components.

Complete information on the 37L Container Latches is available on request from Camloc Fastener Corp., 22 Spring Valley Rd., Paramus, N. J.

## Stack-On Pallet

Irregularly-shaped products, once difficult to handle, can now be tiered, transported in groups, or stored easily and flexibly. The new product has demountable legs that are double braced for extra rugged construction and come in varying lengths for stacking at different heights. Both sizes, 42 inches by 60 inches and 42 inches by 48 inches, have a capacity of 4000 lbs.

Write Johnson-Flaherty, 5801 District Blvd., Los Angeles 22, Calif.

## Small Abrasive Discs Packaged Transparently

Clear plastic tubes are now being used as containers for small abrasive discs made by Behr-Manning Co., Troy, N. Y., a division of Norton Co. The new package is being used for pressure-sensitive adhesive discs up to 2¼ inch in diame-

ter, employed mainly in metal grinding and finishing operations.

The butyrate holders offer ease of opening and removal; complete protection for unused discs in storage; and dust-proof, moisture-tight packaging which retards drying of the adhesive coating.

## Fork Lift Truck Safety Kit Offered

A plant safety kit, aimed at making materials handling operations safer and more efficient in production, storage, and shipping areas by reminding workers of correct operating procedures related to the use of fork lift trucks, is again being released by Towmotor Corp., Cleveland, Ohio.

The complete safety kit contains a pocket-size Lift Truck Operator's Guide, four humorous safety cartoons designed for easy posting on plant bulletin boards, plus four large lift truck route posters printed in bold letters on a bright background, each of which displays a different message of caution regarding narrow aisles, blind corners, dangerous crossings, and low headroom areas.

Free copies of the new safety kit may be obtained by writing Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.

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## COMING FEATURES

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14TH ANNUAL HOME LAUNDRY SECTION — SEPTEMBER

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INVENTORY CONTROL SIMPLIFIED WITH COMPUTER EQUIPMENT

APPLIANCE SERVICE IN CHAMPAIGN-URBANA, ILL.

### DESIGN

DESIGN INNOVATIONS OF NEW STAINLESS COFFEE MAKER

LADY KENMORE PROGRAMMING CONTROLS

DESIGN FEATURES OF TWO NEW ICEMAKERS

### FABRICATION

FABRICATING ALUMINUM BASE ALLOYS (3-PART FEATURE)

NAMEPLATES WITH FLAME-CUT LETTERING

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FABRICATION AT SPEED QUEEN

### FINISHING

NEW 650-FOOT STEEL COATING LINE

HARVESTORE PRODUCTION AT A. O. SMITH

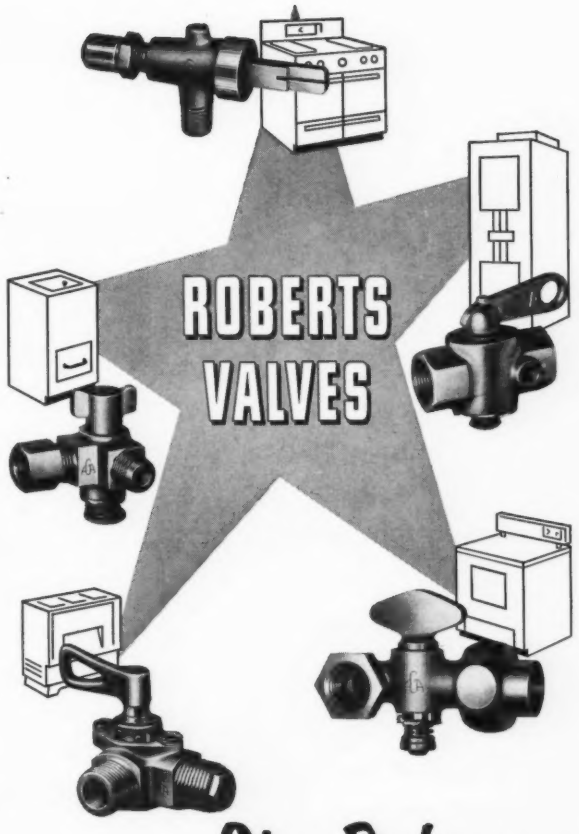
PRODUCTION FINISHING ALUMINUM SIDING

### SAFE TRANSIT

HOW TAPPAN USES THE NST TESTS

MECHANIZED MATERIALS HANDLING AT WESTINGHOUSE

NEW STORAGE CONVEYOR SYSTEM SIMPLIFIES SHIPPING AT SPEED QUEEN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## PEI explores

→ *from Page 42*

clarity and readability. Other applications referred to included a 200 foot bar in San Juan, table tops and wall decorations for a New York restaurant, etc.

### National Design Center

One of the highlights of the two-day meeting was a reception at the National Design Center for a visit to the porcelain enamel industry exhibit, "New dimensions in porcelain enamel." This fascinating exhibit unquestionably represents one of the best jobs that has been done on a cooperative basis to educate the professional designer in connection with the characteristics of, and practical applications for, porcelain enamel. Included in the exhibit were electroluminescent panels as a light source behind a "wheel-and-cross" wall design, expanded metal grilles, a hangup fireplace, a mobile range and barbecue, and other innovations in textures and designs.


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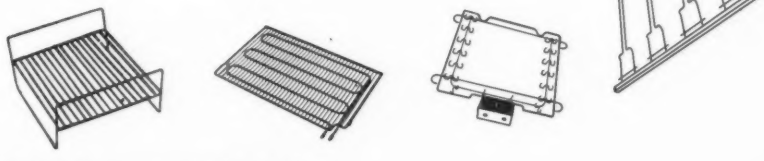

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*Contract Wire Division*

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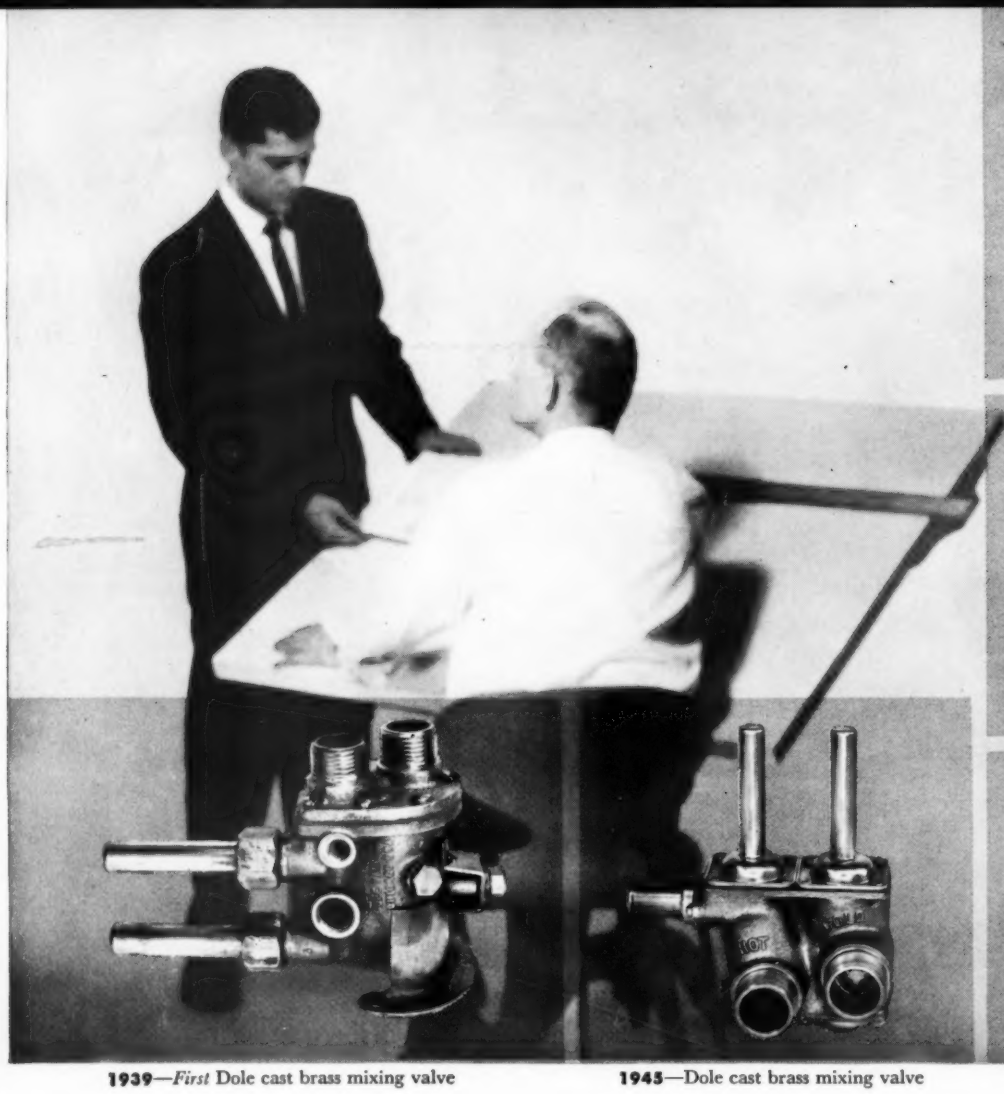
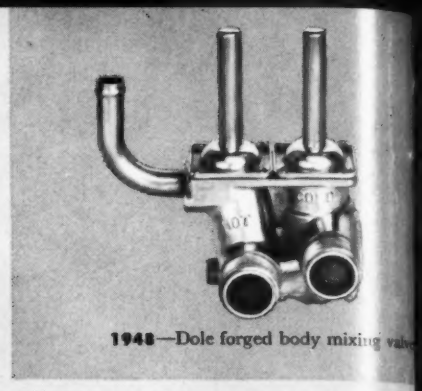
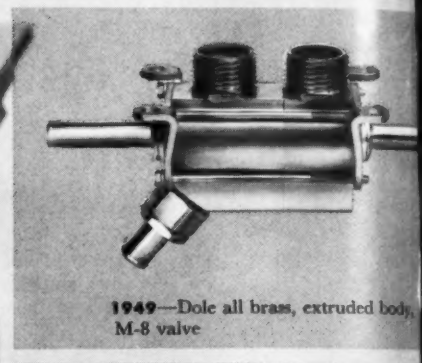


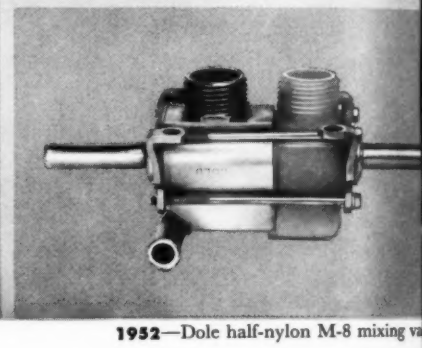
**1939**—*First* Dole cast brass mixing valve



**1948**—Dole forged body mixing valve



**1949**—Dole all brass, extruded body, M-8 valve



**1952**—Dole half-nylon M-8 mixing valve

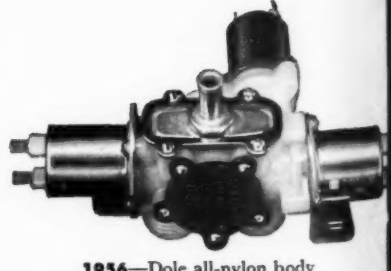
**1945**—Dole cast brass mixing valve

# HOW TO APPLY 21 YEARS OF CONTROLS RESEARCH TO YOUR WASHER DESIGN... IN 90 MINUTES!

Designing an automatic washer that calls for thermostatic controls with the most advanced sophistication in their selectivity? Better call in the Dole field engineer. He represents the *only* home appliance valve and control manufacturer with 21 years of research and development experience. In a 90 minute session he can apply this wealth of knowledge to your problem; tell you if the water control design you want is possible, if it can be designed and built practically and economically. He may even be able to suggest a Dole standard production control (with modifications to meet your requirements) which might well do the job to perfection. The result will be worthwhile savings in time, money and experimentation that will be reflected in the quality of your product.

You see, at Dole, designing controls goes on continuously and, as a Dole customer you get the advantage of every new development as soon as it has passed its lab and production control tests. The six controls above demonstrate one example in the progression of engineering design and development at Dole. Since 1939 six major developments were made in water temperature controls from the early heavy cast brass control to the highly refined, light-weight, all-nylon body solenoid valve at the right—and Dole *alone* was there all the way.

That's why the Dole field engineer who calls on you regularly can speak with authority on all phases of water turn-on, turn-off, flow and temperature control design. He knows he's backed by an engineering department who made the first automatic washer control and is still designing and building the best! The time to call him in is NOW when your design is still on the drawing board.



**1956**—Dole all-nylon body M-26 mixing valve

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**DOLE**

*Appliance Controls Sales Department*
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